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## ORIGINAL ARTICLES.

### THE BACTERIOLOGY OF YELLOW FEVER ONCE MORE.

(Translated.)

BY PROFESSOR G. SANARELLI,  
OF BOLOGNA, ITALY;

PROFESSOR OF HYGIENE AND DIRECTOR OF THE INSTITUTE OF  
HYGIENE AT THE ROYAL UNIVERSITY OF BOLOGNA.

THE latest phase of the scientific discussion concerning the causative agent in yellow fever has led us into a path which threatens to last forever. The question at issue is becoming more and more involved, and is being practically lost sight of in the present discussion by many bacteriologists. It seems to me that the recent publication of the Report of the Commission of Medical Officers,<sup>1</sup> detailed by authority of the President of the United States to investigate the cause of yellow fever in Cuba ought to put an end to further controversy. This report, drawn up in the most conscientious manner, definitely substantiates the etiologic value of the bacillus icteroides. There are certain points of interpretation, it is true, though of very secondary importance, with reference to which there still exist some slight differences of opinion between the results of my own investigation and those of that commission. But these do not affect in the slightest degree the fundamental question at issue.

The investigations of the commission, with regard to yellow fever, I may say in passing, have been conducted with such evident seriousness, thorough preparation and scientific exactness that they form a striking contrast to the almost incredible and unpardonable levity with which a number of my opponents have thought it not improper to approach so important and so difficult a question.

It is perfectly true, as Dr. Novy<sup>2</sup> said, in his last article in reply to me that every scientific publication is open to doubt and should be submitted to scientific criticism. But it is also very true that criticism should not go beyond certain limits established by custom and that the discussion should always maintain a high scientific character, otherwise it will not be possible ever satisfactorily to determine a question. After having sustained with an unreasoning obstinacy that is only equalled by the ill success of their efforts the identity of the bacillus ic-

teroides with that of Dr. Sternberg's bacillus X, Dr. Sternberg,<sup>3</sup> and his disciples, Drs. Reed and Carroll,<sup>4</sup> now dispute my discovery from other and entirely different points of view. So much has been said in fact, that in order to defend myself and satisfy every one, I should have to write an article every day, and there would never be an end of the controversy.

As a matter of fact, the arguments advanced by my eminent adversary, when seriously examined, frequently seem either without foundation or paradoxical; while the continuous insistence with which they are brought forward on every possible occasion renders response to them somewhat embarrassing. I am indeed somewhat of the conviction that the whole discussion is a miserable waste of time, and can have no definite scientific importance.

In this, my last paper in the discussion, I shall ignore entirely all the unimportant collateral questions, and shall set forth the arguments for my position as to the specific pathogeneity of the bacillus icteroides in its simplest and clearest terms. I have proclaimed and still proclaim that the bacillus icteroides is the specific causative agent in the etiology of yellow fever. Before my investigations, it had not been isolated nor recognized by any bacteriologist, nor had it been discovered in any malady, and it had never been found in a human cadaver. Since the publication of my investigation it has been isolated by Mendoza,<sup>5</sup> and Ramos<sup>6</sup> in Brazil; by Mesa-Gutierrez and Orvieto<sup>7</sup> in Mexico; by Pothier<sup>8</sup>, Archinard and Woodson<sup>9</sup> in New Orleans; by Agramonte<sup>10</sup> in Cuba; by Wasdin and Geddings<sup>11</sup> in Louisiana, in Mississippi, and at Havana, and finally by Gauthier<sup>12</sup> in a case of yellow fever transported to Marseilles from Brazil on the steamer "Provence."

It may therefore be set down as definitely decided:  
*First, that the bacillus icteroides is undoubtedly found in patients who are ill of yellow fever, and in cadavers of those who have died from the disease.* This is not an opinion. It is a fact.

<sup>1</sup> MEDICAL NEWS, August 19, 1899.

<sup>2</sup> MEDICAL NEWS, September 9, 1899.

<sup>3</sup> Centralblatt für Bakt., No. 11, 1899.

<sup>4</sup> Brasil Medico, No. 29, 1898.

<sup>5</sup> Boletín de Consig. Supr. de Salubrid., Mexico, April 30, 1899.

<sup>6</sup> Jour. of Am. Med. Assn., April, 1898.

<sup>7</sup> N. Y. Med. Journal, January 28, 1899.

<sup>8</sup> Centralblatt für Bakt., No. 18, 1899.

<sup>9</sup> "Report of Commission," etc., *ut supra*.

<sup>10</sup> Revue d'hygiène, October, 1898.

<sup>11</sup> "Reports," etc., Government Printing Office, Washington, 1899.

<sup>12</sup> MEDICAL NEWS, p. 385, September 23, 1899.

My first investigations, carried out in the only way that was possible under the circumstances, without any guidance from the labors of others, in the midst of manifold inconveniences and in laboratories improvised from day to day on my journeys, allowed me to isolate the bacillus *icteroides* in only a little more than half the cases. I made this declaration with perfect sincerity at the time, just as Loeffler in his first communication in 1884 with regard to the discovery of the bacillus of diphtheria confessed that he had not been able to isolate this micro-organism in every case from the throat of diphtheritic patients. The final demonstration of the specificity of the Loeffler bacillus was made only four years later in 1888, when Roux and Yersin were able to demonstrate in animals the specific lesions of the disease, analogous to those which occur in human diphtheria. I was able to definitely demonstrate the specificity of the bacillus *icteroides* not only as the result of a very large series of comparative observations in animals, but also after having performed a series of decisive experiments on human beings.

I can not ask that this last series of observations be repeated, but I must demand that they should be believed, and I can not permit them to be discussed lightly since I have seen the results recorded with my own eyes, and my observations were confirmed at the time by a number of colleagues who were as familiar as I was myself with yellow fever. When I declare that by means of the toxin of the bacillus *icteroides* I can reproduce in man the typical picture of yellow fever, I must ask that I shall not be met with the obvious objection that others have been able to obtain the same results by means of other microbic toxins. I am perfectly familiar with the investigations made in this matter by Fraenkel<sup>1</sup> and Rumpf.<sup>2</sup> They produced certain symptoms in man by injections of the toxin of typhoid fever and of the bacillus *pyocyaneus*, but these authors have never reproduced either yellow fever or its symptoms, nor its anatomical lesions. If I had not been able to reproduce in man genuine yellow fever, I would never have been justified in declaring categorically that I had discovered the specific cause of the disease. I would practically have lost none of the prestige of my discovery had I simply announced the bacillus *icteroides* as a probable cause of yellow fever, leaving to others the duty of establishing this fact definitively.

The typhoid bacillus to which Eberth's name is usually given was not isolated by Eberth, but by Gaffky. Eberth had simply the distinction of hav-

ing seen it first, and this of itself alone suffices to establish the priority of a discovery. After all it must be remembered that I was not a novice in the field of bacteriology, nor was I making my first discoveries, and it would have been difficult to persuade me to compromise my reputation as a bacteriologist by the imprudent affirmation of facts that could not be substantiated. But even prescinding from such considerations, which, after all, are of secondary importance, it has come about that when investigations could be made with ample assistance and with every convenience of time and deliberation necessary for such work, the bacillus *icteroides* has been isolated in every case of yellow fever.

In fact, Archinard and Woodson in Louisiana<sup>3</sup> isolated the bacillus *icteroides* in eighty per cent. of their cases. Wasdin and Geddings<sup>4</sup> after their lengthy mission of investigation in Louisiana, in Mississippi, and in Cuba declare that the bacillus *icteroides* can be found in practically every case of yellow fever. The other writers whom I have mentioned above, though they have obtained the bacillus *icteroides* from yellow-fever patients and from the bodies of such patients after death, have not taken the trouble to calculate the percentage of cases in which it could be isolated. Agramonte,<sup>5</sup> who was sent by Dr. Sternberg to Havana to make control tests of my investigations, alone, protested vigorously that he was able to isolate it only five times in eleven cases. But he himself confesses that he was not able to carry on his investigations as completely as he would like to have done, because of limited supply of laboratory appliances, and because of the arduous and exhausting work which he had to carry on as a member of the medical staff. This confession accounts amply enough, it seems to me, for his partial success in the investigation. Under such arduous conditions of observation no one could hope to secure better results than did Agramonte under the circumstances.

We may set down as a second conclusion then, *that the bacillus ictteroides can be isolated from practically every case of yellow fever.*

In spite of the repeated substantiation of my investigations Dr. Sternberg and my other opponents have raised the doubt that the bacillus *icteroides* may be nothing more than a very commonplace micro-organism present as a secondary infection. As to this I may be permitted a few brief considerations. How can it be conceded even *a priori* that a microbe which is found constantly in patients sick with yellow fever and in the bodies of those who

<sup>1</sup> *Deutsche med. Wochenschrift*, p. 985, 1893.

<sup>2</sup> *Ibidem*, p. 987.

<sup>3</sup> *N. Y. Med. Jour.*, *ut supra*.

<sup>4</sup> "Public Health Reports," No. 33, 1899.

<sup>5</sup> *Centralbl. für Bakt.*, No. 18, 1899.

have died from the disease; which can be isolated during the life of the patient and which constantly produces a perfect specific serum reaction with serum taken from the bodies of yellow-fever patients, from those actually sick of the disease, from convalescents, and from those who have recovered for many years from an attack of yellow fever; which reproduces in animals and in man, by itself and also by means of the toxins elaborated from it in vitro, the symptoms and characteristic lesions of yellow fever, can ever be considered as a simple microbic intruder on a par with all the other micro-organisms of secondary infection, which are well known and have been studied experimentally in every part of the world, because they are practically the same everywhere and in every disease. Besides this we know that careful observation demonstrates that the bacillus icteroides is the only microbe constantly present in yellow fever.

Archinard and Woodson in New Orleans have succeeded in obtaining agglutination in cases of yellow fever in ninety-three per cent. of the cases under observation. I was not able to obtain it in a single instance in eighty-six cases of normal blood, or in patients sick with other diseases than yellow fever, and have never succeeded in obtaining it in a single case in which the patient was either not actually sick with yellow fever or had suffered from it years before. Wasdin and Geddings during their mission in Havana studied carefully the bodies of thirty-one individuals who died from the most diverse maladies known and unknown, but all different from yellow fever and did not succeed in finding in a single case the bacillus icteroides present.

There has been but one discordant voice in the midst of the perfect unanimity in this matter, and that as might have been perhaps, foreseen, belongs to Dr. Agramonte, who was sent to Havana by Dr. Sternberg. I have never attached much importance to Dr. Agramonte's work for the reason given above, but Drs. Reed and Carroll refer to it very confidently and seem to consider it of the highest importance. It will be well for us then to see how things stand in the matter. Dr. Agramonte sent a report to Dr. Sternberg from Havana, which was published during the current year.<sup>1</sup> He describes the case of a soldier who died with suspicious symptoms as he himself says, "a disputed case." At the autopsy he succeeded in isolating, first the bacillus icteroides, second the colon bacillus, and third, a form of typhoid bacillus. Very naturally Dr. Agramonte takes advantage of so promising an opportunity and immediately assumes that this supposed typhoid bacillus was the prime factor in the soldier's illness. He

finds a way to make it appear that the patient really died of typhoid fever complicated by a secondary infection with the bacillus icteroides. In order to give more weight to his declaration he affirms that the other members of the yellow fever commission, especially Drs. Wasdin and Geddings, had arrived at the same conclusion. It does not require any hypercritical acumen, however, to decide that the disputed case was in reality a case of genuine yellow fever; and that the supposed bacillus of typhoid could be nothing else than one of the numerous bacilli belonging to the same family as the bacillus of Eberth, whose presence I have frequently demonstrated in the cadavers of patients dead from yellow fever<sup>2</sup> and which two of my students, Puppo and Ottoni<sup>3</sup>, have already made the object of lengthy and detailed researches under my direction. Not only can this be presumed to have been the case but Wasdin and Geddings declared explicitly that the case of which so much account was made by Dr. Agramonte (Case No. 7 of their report) was without doubt a case of genuine yellow fever.

Drs. Reed and Carroll<sup>4</sup> were imprudent enough, notwithstanding all this, to announce that they had examined the liver of this case histologically and to announce that "from the microscopical findings we are strengthened in the belief that the bacillus icteroides in this case should be considered as a secondary invader." I can only think that in this they were joking at the expense of the suggestibility of their readers. As if they thought for a moment that it could be supposed possible to believe that by means of a microscopic examination they were able to make the bacteriological diagnosis of the bacillus icteroides in the midst of hepatic tissue, and then could afterward affirm that its invasion was primary or secondary. This assumption of theirs can only be the result of a too vivid imagination, and we can scarcely be expected to follow them seriously. From what I have said I think we can deduce the logical conclusion—*third, the bacillus icteroides is found only in those sick of yellow fever, or in the bodies of those dead from the disease. No one has ever succeeded up to this in finding it in a patient sick from any other disease; nor in the cadaver of any but an individual dead from yellow fever.*

We come now to the experiments on animals. As is the case with typhoid fever, with cholera, with infections by the pneumococcus, or the streptococcus, there exists no single lesion that can be said to be absolutely pathognomonic of yellow fever. The catarrhal lesions of the gastric and intestinal mucous

<sup>1</sup> *Annales de l'Institut Pasteur*, page 440, 1897.

<sup>2</sup> *Annali d'igiene sperimentale*, Roma, 1898.

<sup>3</sup> *MEDICAL NEWS*, p. 329, 1899.

<sup>4</sup> *Centralblatt für Bakteriologie*, No. 18, 1899.



membranes, the erosions of the stomach, the hyperemia of the meninges, and of the parenchyma of certain organs, the hemorrhagic manifestations, the nephritis, the albuminuria and so forth, have, it is true, a particular importance in yellow fever, but they can be found in a great many other morbid conditions either as essential lesions or as secondary complications. Not even the fatty degeneration of the liver can be strictly said to be absolutely specific for yellow fever, since it is found at times in certain other morbid conditions. Despite all this the lesions of yellow fever when taken altogether, as Jaccoud very well says, constitute a pathological criterion that is more complete and more definite for this disease, than the pathological picture presented by the majority of the infectious diseases.

Now as it is impossible to reproduce the clinical picture of yellow fever in rabbits or guinea-pigs, or in animals generally, because yellow fever, like typhoid fever, cholera, pneumonia, and so forth, is essentially a disease that is limited to human beings, the question of the experimental study of the disease in animals must limit itself to the investigation of the question whether the micro-organism, which is supposed to be the specific causative agent of yellow fever, is capable of producing more or less completely all the principal symptoms and the lesions which are considered as more or less characteristic of the disease. As a matter of fact, we are able to obtain in animals, and especially in dogs, practically the whole anatomical and symptomatological picture of the disease. The modern scientific literature of the characteristics of the bacillus icteroides is unanimous in supporting this declaration. There is especially one lesion, however, which can be considered as of the very greatest value and as of almost pathognomonic importance in the post-mortem recognition of yellow fever in human beings. This is the extreme fatty degeneration of the liver. I would like to make it clear at first that when I speak of fatty degeneration I do not attach to the term in the present instance any vague or generic signification, because it is very well known that in many other infectious diseases, human and experimental, the hepatic cell can be affected by degenerative processes, more or less profound. I wish to designate, as a specific fatty degeneration produced by the bacillus icteroides, the true steatosis of the liver; that is to say, a state of extremely profound fatty degeneration, which is produced acutely and with so much intensity that the liver is affected to such a degree, so far as we know up to the present time, by but two specific morbid processes, namely, phosphorus poisoning and yellow fever. I insist upon this point, because I think it can be shown that by

this lesion alone the morbid agent that produces it can be distinguished from every other. Its extreme steatogenic power, with regard to all elements of the body in general, but especially with reference to the hepatic cell, distinguishes the bacillus icteroides from all other pathogenic agents.

This important phenomenon can be observed especially and very noticeably in dogs. Foa,<sup>1</sup> Della Rovere,<sup>2</sup> Belfanti<sup>3</sup> and Zenoni, Bruschettini,<sup>4</sup> Wasdin and Geddings<sup>5</sup> have also observed it in a very marked degree in rabbits, and while Bruschettini has seen it also in pigeons and in turtles.

In the dog, all the observers who have investigated the subject carefully with the necessary experimental ability and without preconceived prejudices, have succeeded in finding this pathogenic action of the bacillus icteroides. To deny it now would seem the veriest absurdity. It suffices to read the experiments of any of the investigators of the bacillus icteroides, of course with the exception of Drs. Sternberg, Reed, and Carroll, and Novy, to find a description of an intense steatosis which has always been obtained with the bacillus icteroides, and never with any other micro-organism. I must, of course, concede to my opponents that not all the races of dogs are possessed of hepatic elements which are equally sensitive to the toxin of the bacillus icteroides. The age of the animal, and especially the race to which it belongs, exercise undoubtedly an important influence in the modification of the phenomena. If the experiments are continued, however, the observer will always succeed in obtaining such examples of acute steatosis of the liver as cannot be obtained experimentally, even when the animals are poisoned by large quantities of phosphorus. The liver appears absolutely yellow. It is anemic, and its density is greatly increased. The picture which I have had drawn and reproduced in my monograph is the only thing that can give a proper idea of its appearance to those who have not actually seen it. It must be remembered that in cases which run a very acute course the dark yellow color characteristic of the fatty degeneration is masked by the congestion, which has been set up in the organ by the intense irritation of the toxins of the disease. It suffices, however, to produce a slight superficial ischemia, by simple compression with the finger, for instance, to produce an immediate return of the dirty yellow color, and this at once discloses the profound steatosis of the organ that has taken place.

<sup>1</sup> *Giornale di real Accad. di medic. di Torino*, No. 3, 1898.

<sup>2</sup> *Riforma Medica*, July, 1898.

<sup>3</sup> *Giornale di real Accad. di medic. di Torino*, Nos. 5 and 7, 1898.

<sup>4</sup> *Gazzetta degli ospedali*, No. 64, 1899.

<sup>5</sup> "Report of Commission of Medical Officers, sent out by the President of the United States, etc., Washington, 1899."



I have not myself seen, nor have any of the well-known investigators who have repeated and confirmed my experiments, ever observed anything similar to this important lesion in animals dead from any other microbic infection. This demonstrates that the steatosis, the true and complete steatosis, which transforms, as I have often seen, the whole liver into a compact mass of fatty degenerated material, is peculiar to the bacillus icteroides.

I have made a great many observations in this matter and the number of dogs that have been killed in my laboratory runs up into the hundreds. As a detail in my last article in the MEDICAL NEWS I have even carefully calculated by mechanical methods the amount of fatty material contained in the liver of dogs killed by the bacillus icteroides in order to compare it with that obtained from the livers of animals killed by other methods of experimental infection. Our experiments included microbes as varied as the cholera vibrio, the colon bacillus, the bacillus pyocyaneus, the bacillus of diphtheria, and the bacillus icteroides. The last mentioned bacillus was capable of producing in a shorter period of time a much larger quantity of fatty material than any of the others. I am myself almost convinced that in Dr. Sternberg's laboratory they have never succeeded in obtaining this steatosis, for it is so peculiarly characteristic that it would at once have attracted attention and convinced even the most skeptical of the specificity of the agents producing it because its appearance is not only extremely peculiar, but because it has an absolute analogy with the appearances which are so well known in human cadavers after yellow fever. This convinces me that perhaps in the Army Medical Museum experiments are devoid of value as far as regards yellow fever, because they are working with a bacillus which is not the bacillus icteroides. It is not possible to admit that in Washington the bacillus icteroides seems to be endowed with characteristics very different from those which have been found repeatedly and indisputably in other cities of the Union, and in all the other countries of the world.

The number of observers who have noted this characteristic steatogenic power of the bacillus icteroides is very large, and is well known by those who follow the literature of the etiology of yellow fever. It is evident then that the negative results obtained by Dr. Sternberg and by those working under his direction are deserving of very little confidence. I think we may without further ado draw the following conclusion: *Fourth, the bacillus icteroides reproduces in animals all the symptoms and all the anatomical lesions which can be considered especially characteristic of yellow fever in human beings.*

Having said this much I may be considered I think rigorously to have fulfilled my duty. Koch's famous laws may seem to have lost some of their primitive and absolute value in our day. Yet, notwithstanding this, it is true that the bacillus icteroides, considered as the specific causative agent of yellow fever, is in all important particulars perfectly in accord with these laws. First, it is found in practically every case of yellow fever. Second, it is never found outside of yellow fever. Third, it can be cultivated in artificial nutritive media. Fourth, it reproduces in animals an anatomical and symptomatic picture analogous to that of yellow fever in the human being.

I have still to reply, however, to certain objections which have been more or less courteously urged against the results of my investigations by Drs. Reed and Carroll. The insistence of these two young bacteriologists of the Army Medical Museum, it strikes me, is due rather to an unfortunate deference which they have for the opinions of their surgeon general than to any special desire for the advancement of scientific truth.

I certainly do not feel that it would be quite proper to force Drs. Reed and Carroll into insubordination to what they seem to think their duty, nor do I wish to tire the reader's patience nor take up valuable space in the MEDICAL NEWS in discussing point by point their last article.<sup>1</sup> In that article, while professing a spirit of the greatest courtesy towards my modest person, they get into a most inextricable confusion of experimental results and scientific deductions, but somehow out of it all they emerge at the end with enough energy and self-confidence left to insist that the bacillus icteroides is identical with, or at least is a variety of, the bacillus of hog cholera!

It is only too well known that microbes are like human beings, in this particular at least; seen from a distance they all look alike. Even Drs. Reed and Carroll themselves have furnished an excellent demonstration of this principle when they write: "On the contrary, we wish to state that placed side by side in gelatin we have been unable to detect any differences in the colonies of the two bacilli with the naked eye, and that it is only by means of the microscope that faint differences can be detected."<sup>2</sup>

I do not deny that between the bacillus icteroides and the micro-organisms that cause hemorrhagic lesions (hog-cholera, swine plague, pneumo-enteritis of swine, etc.) there are certain points of resemblance. This family of microbes is, in fact, so extraordinarily pleomorphic in character that the members of

<sup>1</sup> MEDICAL NEWS, September 9, 1899.

<sup>2</sup> MEDICAL NEWS, September 9, 1899, p. 324.

it present some points of resemblance with practically every sort of micro-organism. As the result of this they have been the subject of very great, almost hopeless, confusion in contemporaneous bacteriological literature.<sup>1</sup> Even up to the present time bacteriologists have not succeeded in establishing with anything like unanimity characteristics by which they can be definitely differentiated, so mutable are their qualities under varying conditions. To raise this question, as Drs. Reed and Carroll insist on doing so obstinately, after all that has been said with regard to the isolation and the thoroughly studied characteristics of the bacillus icteroides, may serve as a sport on which to while away time in a laboratory, but it will never assist medical science in the solution of the important problem of the etiology of yellow fever.

Instead of remaining in Dr. Sternberg's laboratory, ever on the hunt for anything that seems likely to hurt the reputation of the bacillus icteroides, laboriously constructing theories that may destroy its significance, Drs. Reed and Carroll would have employed their time much better if they had followed the very practical example of their colleagues of the Marine Hospital Service, who, in order to make control observations on my investigations, went into parts of the country infected with yellow fever. It is at Havana or in New Orleans that a properly critical judgment on my work on yellow fever can be formed, not in the Army Medical Museum in Washington, and especially not under the direction of Dr. Sternberg, who somehow feels himself forced into the unfortunate position of a man, who, not having succeeded in an undertaking himself, pretends to believe that others cannot have been more acute or more fortunate than he was.

As it is now it will evidently be impossible for Doctors Reed and Carroll and myself ever to come to an understanding. Any *rapprochement* of opinions on our part would seem to be precluded by the persuasion that I can not shake off, that Drs. Reed and Carroll either have not been experimenting with the bacillus icteroides at all, or else they do not know how to experiment.

Certain of the expressions they use in their last article would seem to point very clearly to the fact that their experiments were not done with the bacillus icteroides. They say on p. 327 of the MEDICAL NEWS for this year: "True we did state and we wish here to repeat, that, with one exception hereafter to be mentioned, the fatty change found in the livers of the dogs experimented with is not comparable to that found in the liver of human beings who have died of yellow fever, and we may

add that there is an almost entire absence of that necrosis of individual liver cells which is so prominent a feature in the human liver."

I do not wish to fill out a long article with excerpts from the opinions of well-known bacteriologists who have recently made series of experiments with the bacillus icteroides. I can, however, say at once without more ado that this opinion of Drs. Reed and Carroll is positively contradicted by the results obtained by bacteriologists who live in countries where yellow fever is endemic, and who are therefore in a much better position to know its characteristic anatomical lesions than are my confreres of the Army Medical Museum. De Lacerda, Ramos, Fajardo, Conto, Mendoza, not to mention others, have carefully studied the pathogenic action of the bacillus icteroides on animals and have become completely convinced of the perfect analogy which exists between the hepatic steatosis produced by this micro-organism and its toxins and that which is found in the cadavers of patients who died from yellow fever.

Doctors Reed and Carroll declare in addition that the bacillus icteroides produces in young pigs the characteristic symptoms and pathognomonic lesions of hog-cholera. But in their experiments done at the quarantine station of the Delaware Breakwater, their colleagues of the Marine Hospital service, Wasdin and Geddings, assert precisely the contrary and declare that young pigs are absolutely refractory to inoculation of the bacillus icteroides. I do not wish to doubt their repeated declarations in the matter nor to discredit absolutely all that they have written, but I am becoming more and more convinced that they have been all the time experimenting with the bacillus of hog-cholera, while they have been as constantly under the impression that they have been experimenting with the bacillus icteroides.

The fact reported by them that my serum causes an agglutination even at very high dilution in liquid cultures of the bacillus of hog-cholera demonstrates absolutely nothing. The phenomenon of agglutination has a value only in certain special conditions, even the serum of the normal horse may possess of itself a very high agglutinative power with regard to certain microbes. In place of working with a serum prepared artificially from horses, Drs. Reed and Carroll would have done much better had they followed the example of their confrères in New Orleans—Pothier, Archinard, Woodson, and others. These men demonstrated that the bacillus icteroides is agglutinated only by serum taken either from those who are actually sick of yellow fever, or from those convalescing from the disease. Serum taken

<sup>1</sup> W. Selberschmidt, *Annales de l'Institut Pasteur*, p. 59, 1895.

from such patients, however, they demonstrated to be completely inactive in regard to any appearance of agglutination in cultures of the typhoid bacillus, and especially as far as regards the colon bacillus, although, as is well known, this last is practically the ordinary agent of secondary infection in yellow fever. I think that it is entirely repugnant even to the most elementary common sense to suppose that the specific causative agent of a disease of hogs, which is very well known and widely diffused over the world, should always have been found, precisely and as it were regularly, in the sick and the dead from yellow fever in cases studied at Rio de la Plata, in Brazil, in Mexico, in the United States, in Cuba, and in Europe. The supposition is so paradoxical that, even without the considerations which precede it, it practically is decisive of the question at issue. It suffices by itself to destroy the quaint edifice of theory which has been raised up in opposition to the bacillus icteroides in the laboratory of Dr. Sternberg.

Finally, I must mention that even Wasdin and Geddings have described very exactly the curious and very well known method in which the bacillus icteroides develops when cultivated on agar-agar at different temperatures. While no one among the authorities who have studied accurately the protean morphology of the microbe of hemorrhagic septicemia have ever mentioned anything like it in the cultures of these microbes.

With reference to the last objection, that raised by Dr. Novy,<sup>1</sup> my reply will be very brief. The question of the resistance to cold is one that can be passed over as of very little importance in the face of the clinical demonstration and the bacteriological and experimental observations which attest that the bacillus icteroides is the true cause of yellow fever. I have already shown how it is possible that an epidemic of yellow fever may become extinguished at the approach of winter, without it being necessary to admit for this reason that its specific causative agent is destroyed by cold. But if Dr. Novy once concedes that the germs of yellow fever can live even during the winter time in clothing, or in the interior of houses, etc., he must admit that the supposition that they always perish because of cold is theoretically undemonstrable. As a matter of fact every time that an epidemic of yellow fever recurs in the same place in which it was raging before an interval of cold, it can be said that while the germ of the disease has perhaps failed to retain its vitality on the streets and in the open places generally, it has been protected from the effect of the winter temperature in houses, in clothes, and clothing, etc.,

so that the problem becomes practically insoluble. Dr. Sternberg<sup>2</sup> himself has written: "It is claimed that the epidemic of 1897 in the City of Memphis was not due to a new importation but resulted from the liberation of germs in houses that had become infected during the epidemic of 1878." For cholera also the same law seems practically to hold good. It has often been noted that cholera is more apt to continue during the winter than yellow fever. This is certainly due to the fact that the bacillus of cholera is less fastidious than the bacillus icteroides, either as regards the kind of nutriment it requires, or the conditions of life and of development which it demands. With reference to the other objections urged by Dr. Novy it is not worth while to discuss them in detail. They have an importance entirely secondary, and would, besides, lead to an interminable discussion. The scepticism which Fraenkel expresses with regard to the yellow fever in certain synthetic writings of his cannot be considered to have more value than as a platonic expression of doubt. He does not present the slightest scientific basis to support his gratuitous opinion. In Germany they are a little too much accustomed to very legitimate and very praiseworthy triumphs of German science. They do not easily admit, without a good deal of preliminary delay and restriction, that bacteriologists in other countries may also be able to make genuine bacteriological discoveries.

As to the doubt expressed by Thoinot, it falls practically into the same category. There is, however, one aggravating circumstance in his declaration of opinion. He makes a comparative review of my first monograph on the subject, and that of the well known Dr. Havelburg, but he does not realize that this last is the most ridiculous, most puerile contribution to the contemporaneous literature on yellow fever that has ever been made. He makes abstracts from both works with evident good faith, and makes it clear that he is not gifted with a very highly developed critical sense.<sup>3</sup>

Finally, I wish to correct an inexactitude into which Dr. Novy has fallen. The antitoxic serum

<sup>1</sup> "Report of Yellow Fever," p. 49, 1899.

<sup>2</sup> Dr. Havelburg made his experiments by inoculating directly under the skin or into the peritoneal cavity of guinea-pigs the intestinal contents, or the black vomit, of patients sick with yellow fever, or these same substances obtained from yellow-fever cadavers. The guinea-pigs very naturally died almost at once of septicemia, and Dr. Havelburg had the good fortune to succeed in cultivating immediately, and in pure culture, from the heart's blood of these animals, the true specific bacillus of yellow fever! It is useless to add that this extraordinary bacillus had the unfortunate property of behaving itself entirely and under all circumstances just as does the most classic of colon bacilli. In 1897 it might have been possible for a writer to be still somewhat in doubt with regard to the results of my experiments, but surely he should not have been so ingenious as to take seriously the wind-bag that issued from Dr. Havelburg.

<sup>3</sup> MEDICAL NEWS, September 23, 1899.



used by Dr. Foa in his experiments was not always prepared by him, but is the same as that which I prepared and used in my experiments at Montevideo before any one else. I have never ventured myself to declare positively that any anti-amaryllic serum was endowed with antitoxic properties, since I never succeeded in gathering sufficient evidence of that fact to satisfy myself. I was very willing, however, that Professor Foa should attempt to demonstrate it, and very glad that he succeeded.

This fact may serve to prove once more that in all of my work on yellow fever I may, perhaps, have committed faults by excessive reserve. I certainly never did so by making imprudent affirmations with regard to facts of which I was not sure or had not carefully demonstrated. I flattered myself with the thought that my inevitable adversaries would adhere to the same system. It is needless to say that I have in this suffered from a profound delusion.

It may be that there are still intelligent medical men who think that more light is needed on the etiology of yellow fever. For myself, I must say that very few etiological problems have been robbed of their mystery and demonstrated with as much clearness and rapidity as this one. May I add that no work of serious importance so conscientiously performed as was this one has ever been the subject of criticism so superficial and withal so obstinate as my research on yellow fever has called forth.

#### SOME PECULIAR PHASES OF TYPHOID FEVER.<sup>1</sup>

BY E. G. JANEWAY, M.D., LL.D.,  
OF NEW YORK;

DEAN, AND PROFESSOR OF MEDICINE, THE UNIVERSITY AND  
BELLEVUE HOSPITAL MEDICAL COLLEGE.

THE number of papers promised upon typhoid fever in its different aspects has led me to limit myself in time and subject. I have thought that a brief notice of some of the peculiar aspects in which the disease has at times been observed might be of interest. So far as I can learn, one of the effects upon the nervous system must be very uncommon in this country. It has been my good or bad fortune to meet three cases of tetany developed in the course of typhoid fever. I have made brief mention of two of these in the discussion of the paper upon tetany read before the Association of Physicians, by Dr. F. C. Griffiths, and published in the "Transactions," vol. ix. Those two cases related, the one to a male patient seen at Bellevue Hospital, and the other, a lady seen in consultation with Drs. Dennis and Garmany. In this latter case the

disease formed a distressing and embarrassing complication, for the rigidity involved not only the extremities but also the jaws. The feeding, in consequence, became a matter of considerable difficulty. She recovered after a protracted sickness. The third case I saw in the spring of this year in consultation with Dr. Manges of this city. This patient was very ill and suffered with marked tympanites at the time of the development of this complication. He died as a result of perforation of the bowels, his condition at the time forbidding recourse to a laparotomy for the cure.

It is possible that some have encountered cases of this nature, but have considered them rather as instances of marked muscular rigidity than as tetany. Dr. Manges has told me of his intention to publish this last case, and that in written communications which he has had with different physicians of large experience in typhoid fever in this country he cannot find one except myself who has happened to encounter it complicating typhoid. Should any desire a good account of tetany, I would refer them to the masterly article by Trousseau in his work on clinical medicine, though the therapeutics have changed, and to the additions in the works on nervous diseases published since that date, Trousseau, you will find, speaks of its occurrence rather after than during typhoid. At times, moreover, probably owing to individual idiosyncrasies, the mental state is rapidly altered in typhoid fever, so that patients are supposed to suffer from mania or melancholia, or possibly from puerperal insanity. It has been my fortune to witness patients in the early state of typhoid fever where the question of the first mentioned condition was entertained, instead of the disease which had initiated the phenomena through its influence upon the system. A careful study of the physical state of a patient on more than one occasion should prove to a careful observer such associations with perverted mentality as would prevent the diagnosis of insanity. Nevertheless I have in the past seen patients sent to the reception hospital for the insane who had fever. Such psychoses should be considered totally apart from the delirium proper of the disease, which occurs toward the late period of the illness, and in fact they need a different method of treatment.

Allied to this mental state is also the suicidal tendency which at times is developed in typhoid fever. Such complication may apparently come out of a clear sky, but it should be kept in mind as a possibility and guarded against if the least suspicion of its approach arises; for no more sad affliction can befall the friends of the patient. It would be a wise rule never to leave a delirious patient alone, never

<sup>1</sup> Read at the Sixteenth Annual Meeting of the New York State Medical Association, held at New York, October 24-26, 1899.

to have windows, more especially if on an upper story, so arranged that the patient can get out, and never to have pistols, razors, knives, etc., in such proximity to a feverish delirious invalid that he could readily use them should an insane impulse seize him. It is not enough to have an order given that the attendants shall not leave a patient under these circumstances, but to provide such accessory help as shall make it possible that the rule shall be enforced.

I should like also to speak of two eruptions which have had considerable interest for me in typhoid fever. Herpes labialis is of such extreme infrequency in typhoid fever that its presence in a suspected case makes me carefully revise the diagnosis. On not a few occasions, when I have noted it in cases which I had been told were probably typhoid fever, has its presence seemed to make me give to the case a more than ordinarily rigid examination. This has resulted in usually discovering a hidden pneumonia, cerebrospinal meningitis or malarial fever as cause instead of typhoid. Herpes is not impossible in typhoid, but improbable. For a considerable period I had seen a number of cases of typhoid without encountering a petechial eruption as a complication and had felt inclined to say that it did not occur. Later I was obliged to admit its occasional occurrence in the late stages of the disease. The following illustration will, perhaps, show the want of foresight in making a too dogmatic assertion. At a time when some typhus fever was prevailing in New York, I saw in consultation, in the early period of his illness, a young man with a serious fever; as yet it was not possible to name it unless I had chosen the method of Chambers and dubbed it typhoid fever. I told the physician in attendance that taking all the conditions into account it would in all probability be typhoid, but that if a petechial rash should develop in a few days we would be obliged to consider it typhus fever. A little later I was asked to come again as a petechial rash had been observed. To my surprise, however, I found that a catarrhal jaundice was present as a complication, and with this he had developed an erythema, in the center of the patches of which, in not a few places, were petechiæ. There was not the rash characteristic of typhus. All the phenomena at that time, and the subsequent course sustained the diagnosis of typhoid fever. Again toward the end of typhoid fever hemorrhagic tendencies may develop and petechia occur. The strangest aspect I have seen produced is that which may develop under the coils of the cold water tubes, if such are too continuously applied to the abdomen in these cases. Wherever the coils have lain a thickly set crop of

petechia may be present with intervening sound skin producing an appearance of circular rows of blood extravasation. I might add that when these hemorrhagic tendencies occur I have found the tartrate of iron and potash of service.

The onset of typhoid fever in women during the puerperal period has been in my experience a source of serious anxiety to the physician until the proper diagnosis was established. In one case more especially all the circumstances seemed to point toward septic rather than typhoid fever. A woman was delivered with instruments, by a demonstrator of anatomy, before a class of students in a college amphitheater, and within thirty-six hours after confinement developed a fever. For some days the source of this fever was uncertain, though the complete absence of proof of inflammatory conditions in or about the uterus seemed to warrant the hope that the possibility of infection from the conditions named had made the physician unduly alarmed. The patient became early violently delirious, developed diarrhea, and died of exhaustion. The autopsy showed death due to typhoid fever, and entire absence of inflammatory conditions about the uterus or adnexa. The consideration of this diagnostic problem has been forced upon me six times. In one other the fever developed on the day of confinement, which occurred in the Emergency Hospital of this city.

Another problem will at times occur owing to pain in the right iliac region. Pain and tenderness in this situation may be greater than usual not alone at the outset of a typhoid fever, but also in the early period of a relapse. Thus with fever may occur a possibility of mistake in diagnosis between typhoid fever and appendicitis. In fact, I have met or had knowledge of seven cases in which either the appendix was removed or a laparotomy performed, and the appendix not removed because normal, or the operation proposed in typhoid fever at the early stage or in the commencement of a relapse. Moreover, I have been consulted in one case to decide whether there was typhoid fever or appendicitis in a young woman of sixteen because of chills, fever, and pain and tenderness on the lower right side of the abdomen, which was dependent upon a sapremia due to a retained menstrual flow. Whilst early operation is desirable in appropriate cases of appendix inflammation, it is certainly a great error of judgment to remove the appendix in the early period of typhoid fever because of the liability to diagnostic error, and of the haste necessary to operate in uncertain cases. The study of the history of the case, an examination of the number of leucocytes, a careful physical examination with especial attention to

the size of the spleen and the presence or absence of roseola, will in most cases help in establishing a correct diagnosis. The absence of leucocytosis would favor the diagnosis of typhoid, whilst a decided leucocytosis would be against typhoid fever, as the condition or as the sole condition. Of course, I am aware that in rare instances the appendix may give rise to trouble in typhoid fever. The leucocyte count has helped me decidedly in two cases in this category, though in one I was unable to see the patient until the second day, but had required a count of the white cells while waiting. The twenty-four-hour's delay was as helpful. There was no leucocytosis, and the pain and tenderness had disappeared from the right iliac fossa by the time of my visit. The patient went through a relapse of typhoid fever.

Two conclusions, moreover, have been forced upon me as the result of observing a large number of persons infected with fever in institutions. When the subjects are young and but a meager history has been kept, a simple observation of a considerable number may not enable the medical observer to decide positively whether he has to deal with typhus or typhoid fever, provided that from the knowledge that typhus fever exists in the vicinity he is aroused to suspect it. Again when typhoid fever breaks out in an institution, particularly among young people, a considerable proportion of those attacked will not develop the complete disease. While perhaps the word abort may not be the most correct, it most fully expresses what I have observed in this regard at outbreaks in the Deaf and Dumb Asylum of this city, the Catholic Orphan Asylum, and in another institution. Of a large number becoming sick with much the same symptoms, in as considerable a number as one-half the fever would subside within three to ten days. The observation of this occurrence on several occasions has forced me to believe that we have a typhoid febricula though we are only able to rightly recognize it when a number of others subject to identical conditions become ill in the same way, at the same time, but proceed to the full development of the malady. I have long desired to have such cases tested for Widal reaction, but no opportunity has been afforded. Such a conclusion shows how erroneous is the reasoning of those who at the beginning of a fever immediately dub it typhoid fever and after medication of a special kind claim that the disease was aborted by the measures employed. In the cases of which I make mention Nature was the aborter, if I may so express myself.

This leads me to mention two conditions which are observed occasionally in the early period of typhoid fever. The first consists in an attack of

stomach and bowel trouble with fever, or fever without these, which subsides in one to two or three days. This leads the physician to suppose that the case was one merely of some intestinal intoxication, grippe, malaria, etc. But after a short period of time the patient passes into a regular typhoid fever. The observation of cases of this nature each year has led me to feel assured that, directly or indirectly, the typhoid organism has been responsible for such occurrence. So also again at times it will be found that without antipyretics there is a drop of temperature toward the close of the first week or in the early part of the second week lasting for a considerable part of a day. My first attention was drawn to this at a time when relapsing fever prevailed in New York City and I had hoped that a patient who seemed to have typhoid might instead have, owing to this, relapsing fever, but the rise in temperature was present the next day and the case continued as well defined typhoid, terminating fatally by intestinal hemorrhage at the close of the second week. Rarely since then have I met this same peculiarity. Observations of this nature demonstrate the need of continued care where any suspicion exists of the development of typhoid fever.

A number of other conditions suggest themselves as of interest, but I will mention only one other of considerable importance. I advise that in office practice rectal temperatures should be more frequently used not only in the first stage of typhoid, but also in other febrile conditions. The temperature of the mouth may be normal while that in the rectum shows the true condition of affairs. Not a few patients, who come to a physicians office with headache and malaise would be sent home instead of receiving a prescription to relieve an engorged liver, or remove a rheumatic or gouty condition, etc., were rectal temperatures more frequently employed in office practice.

#### **TYPHOID FEVER AS SEEN IN BELLEVUE HOSPITAL.**

By A. ALEXANDER SMITH, M.D.,  
OF NEW YORK;

VISITING PHYSICIAN TO BELLEVUE HOSPITAL AND PROFESSOR  
OF THEORY AND PRACTICE OF MEDICINE, UNIVERSITY  
AND BELLEVUE MEDICAL SCHOOL.

In a charity hospital like Bellevue, the patients whom we see come largely from the lower walks of life. A small minority, perhaps, have been in better social conditions than going to such a hospital would imply, but who may have been unfortunate. While, as has been often observed, the most of the cases of typhoid fever at Bellevue come during the months of August, September and October, there are years in which one or more patients suffering



with typhoid fever may be found in every month.

It is always our endeavor to trace, as far as possible, the etiology of every case. This can be done with very little difficulty in the majority of instances, either from the patient himself or from his friends. We are always interested to ascertain if possible if the patient has contracted his illness in the city. In a pretty large proportion of cases we can get a history that the patient has been out of the city for a longer or shorter time, within a comparatively recent period before his attack of illness. Even if the patient has been out of town for a day or a part of a day at a time, we assume an exposure to the bacillus while on such a visit. It is not always possible to obtain accurate information on this point. The patient is asked if he has been out of town during the past few weeks? He will usually answer, no; he has not, but when we come to question him more closely, we find that perhaps he has been out of town for a few hours on Sunday; and this custom of going out of town a part of the day is common, even among the poorer classes. But, in a small minority of cases, we get positive information that the patient has not been off Manhattan Island for months.

It is believed that Croton water is free from the typhoid bacillus. In some instances it is probable that the source of infection is contaminated milk; sometimes perhaps from vegetables or other articles of food; we are even willing to admit that the beloved bivalve may be responsible for an occasional case. With all care and giving all attention to the question of etiology, we are met with the fact that in a certain proportion of cases it is impossible to trace any reasonable etiology.

The cases to which I shall refer were observed in the wards of the Third Medical Division of Bellevue Hospital. This is one of the four medical divisions of the hospital. There were 104 cases with 10 deaths; a mortality of 9.6 per cent. Of these 104 cases the histories of 87 only were sufficiently accurate to make any tabulation. Of these 69 were males and 18 females. The ages of these patients ranged from fourteen to fifty-nine, 17 cases from fourteen to twenty.

(I ought to say that this period is only six years, because patients under fourteen years of age are not taken in the regular medical wards of Bellevue Hospital, but are assigned to the children's wards.)

From the ages of twenty to thirty there were 54 cases; from thirty to forty, 12 cases, and 4 were over forty years of age.

*Occupation.*—Artisans 14, laborers 20, domestics 12, housewives 8, messengers 11, soldiers 5, students, salesmen, etc., 14, not stated 3.

*Social Status.*—I group under this head all information obtained from the personal history, the occupation of the patient, the condition in life, the surroundings, the opportunities for obtaining proper food, etc. It is sometimes necessary to obtain this information from friends of the patient.

Poor condition, 28 to 33 per cent.; fair condition, 44 to 53 per cent.; good condition, 11 to 14 per cent.; not stated, 4 per cent.

Necessarily the standard of social status in a charity hospital must be low. These percentages are therefore relative only.

*Physical Condition on Admission.*—The proportions may be summarized as follows: poor, 24 to 29 per cent.; fair, 35 to 42 per cent.; good, 24 to 29 per cent.; not stated, 4 per cent.

*Use of Alcohol.*—These may be divided in four groups, thus: abstainers, 34 to 43 per cent.; in moderation, 30 to 38 per cent.; immoderate, 15 to 19 per cent.; not stated, 8 per cent.

Where the statement is made "not stated" either the patient was not in condition to give the history or the friends could not give it.

It will be noticed that the percentage of the immoderate use of alcohol is not high. In almost any other class of cases in Bellevue Hospital, particularly among males, the percentage of those who use alcohol immoderately is very much higher, as is strikingly illustrated in pneumonia, where the percentage of the immoderate use of alcohol is between 60 and 70.

*Initial Chill.*—Of the initial chill or decided chilly sensations patients are apt to give an indefinite history, but care was taken to get as definite statements as possible. The figures show:

Chills or chilly sensations absent, 35 to 43 per cent.; chills or chilly sensations present, 46 to 57 per cent.; not stated, 6 per cent.

*Condition of Bowels.*—Diarrhea, 50 to 57 per cent. constipation, 20 to 24 per cent.; regular, 15 to 1 per cent.; not stated, 5 per cent.

The percentages of the conditions of the bowels vary very much in different years. In some years the percentage of patients with diarrhea is very much larger than in others. If there have been more than two movements of the bowels per day the record was made that there was diarrhea.

*Epistaxis.*—This symptom was absent in 47 cases, fifty-nine per cent.; present in 33, or forty-one per cent., and not stated in 7 cases.

*Eruption (Rose Spots).*—Absent in 20, or twenty-three per cent.; present in 67, or seventy-seven per cent. This, again, varies very much in different years. In some years the percentage of cases in which the eruption occurs is small; in other years it

is large. In some instances the eruption will be very abundant. There were two cases in which the eruption covered the body to such an extent that it led to doubt as to whether it was the typhoid eruption. One patient in particular looked almost like a child covered with the eruption of measles. The fever ran a mild course in this patient, and he recovered. In another case the eruption was very abundant, and some of the spots of eruption became petechial. This was a very severe case, and the patient died.

*Enlarged Spleen.*—Careful examination showed it to be absent in 20 cases, twenty-three per cent.; present in 67 cases, seventy-seven per cent. The enlargement was determined by palpation, percussion, or both. In some of the cases patients were brought to the hospital at a stage in the disease when the spleen had diminished in size to normal or nearly so.

*Widal's Blood Reaction.*—This more recent diagnostic test was absent in 10 cases, eighteen per cent.; present in 49 cases, eighty-two per cent.

*Ehrlich's Diazo-reaction in the Urine.*—The characteristic reaction was absent in 15 cases, twenty-six per cent.; present in 44 cases, seventy-four per cent. The figures for the Widal-test and the diazo-reaction were taken from the last 59 cases. In 6 cases the Widal test was present, and the diazo-reaction absent, whereas in 5 cases the Widal test was negative and the diazo-reaction present.

*Albumin in the Urine.*—This was determined to be absent in 26 cases, twenty-nine per cent., and present in 61 cases, or seventy-one per cent. One case of true nephritis was observed.

*Relapses.*—Relapses occurred in 8 cases, nine per cent.; all recovered. In 1 case there were three relapses; in 2 cases there were two; in the other 5 but one relapse. The duration of the relapses varied from nine to twenty-two days.

*Fatal Cases.*—Of the 10 patients that died, 3 were laborers, 1 an artisan, 2 were domestics, 1 was a messenger, 2 were housewives and 1 a soldier. Seven were males and 3 females. In 4 the social status was poor, in 5 it was fair, and in only 1 was it good. In 6 the condition on admission was poor, in 2 it was fair, and in 2 it was good.

*Complications and Sequels.*—In four of the cases there was pregnancy. All recovered without aborting. There was chronic endocarditis in one case with recovery. Pneumonia and nephritis was present in one case. This patient died. In one case there was unilateral parotitis. It was only moderately severe and resolved without suppuration. Laryngitis with edema glottidis was a fatal complication in one case. Double otitis media was present

in one case, while in five cases plasmodium malariae was demonstrated during convalescence. Phlebitis occurred in three cases. In two of these it was single, both on the right side, and both involved the internal saphenous vein. The third case was a double phlebitis, involving the femorals. The patient recovered after a long period of sickness. In none of the cases was there gangrene. There was orchitis in one case. Four patients were addicted to the immoderate use of alcohol, three were moderate drinkers, and two were abstainers. Both of these latter were women. In one of the fatal cases it was impossible to obtain information with reference to the use of alcohol.

I might mention in this connection a case which aroused much interest in the hospital, although not occurring in the Third Medical Division. A patient had had a moderately severe attack of typhoid and had convalesced slowly without any special features, and on the 28th day of his convalescence he was sitting in an arm-chair reading a paper. He had advanced sufficiently to be dismissed from the hospital and was simply waiting until the next day to be dismissed. He got up from his chair, suddenly had a severe pain in his abdomen, fell over in collapse and died in a few hours. The autopsy revealed a perforation.

*Cause of Death.*—The actual causes of death were as follows: Perforation, 2; pneumonia, 1; excessive high temperature, 2; laryngitis, with edema glottidis, 1; peritonitis, from the officious interference on the part of the house physician, 1. This last case was a very severe one, and had as a complication double otitis media. So far as the otitis was concerned the patient was apparently progressing favorably but had persistent tympanites. The house physician, without consulting the visiting physician, with a hope of relieving this tympanites, aspirated the intestine. The patient promptly developed acute peritonitis and died; autopsy showed the peritonitis as having apparently developed from this puncture. Three died apparently from exhaustion due to toxemia. One of these a woman of fifty-nine—fat and flabby. Decided hemorrhage occurred in only two cases, both in the third week. These patients recovered. Slight discharge of blood occurred in several other cases, but not of sufficient quantity to be called a hemorrhage.

The highest temperature recorded was 106 $\frac{3}{4}$ ° F. In another case the temperature reached 106 $\frac{1}{2}$ ° F. Both of these cases obstinately resisted all efforts to reduce temperature. They are the two cases referred to among the fatal cases as dying from excessive high temperature.

*Treatment.*—Baths were resorted to in 48 cases; drugs and other forms of treatment in 39; the av-

average number of baths was 20, though they ranged from 2 to 92 in number. In some cases the disease ran such a mild course that practically no treatment was resorted to.

The treatment was usually initiated by a dose of calomel, followed by a saline cathartic. This was, perhaps, repeated during the first week of treatment once in forty-eight hours, depending on the effects produced. Usually after the first week, if constipation was a prominent feature, as occurs in a considerable proportion of the cases, enemas were relied on for its relief. For the relief of the tympanites salol or beta-naphthol were relied on for internal medication. If diarrhea was a marked feature some form of bismuth, preferably the subgallate, was added. For external application for relief of tympanites, hot turpentine stupes or the cold Leiter coil was used. If the patients were seen during the first week and wakefulness was a prominent symptom, with decided delirium, hypnotics were used. These were specially indicated in many of the decidedly alcoholic cases. If the wakefulness was pronounced and headache severe some preparation of opium would answer a better purpose in giving relief. Sometimes the ice to the head was resorted to with relief.

As stimulants, alcohol, in the form of whisky, strychnin, and caffeine were relied upon. The last in only a few instances. Only in pronounced alcoholic cases was alcohol commenced early; in the other cases alcohol was resorted to only when there were special indications, as shown in the condition of the pulse and nervous system. Alcohol was not used indiscriminately, but only in cases which specially indicated it. It was used most freely in the cases showing the restless wakefulness of exhaustion, or in the exhaustion of the nervous system or circulatory system. Rarely was it necessary to use more than 6 or 8 ounces in the twenty-four hours. In exceptional cases, perhaps, that was increased to 10 or 12 ounces. The alcohol was stopped as soon as indications for its further use were past. Water was given to the patients freely. Milk formed the main article of diet throughout the course of the attack. Animal broths, well salted, were allowed once or twice a day. In some cases the white of an egg would be added to a glass of milk three or four times a day. In cases of alcoholics, where the gastric irritability was pronounced, and even milk produced disturbance, Vichy was added to each glass of milk in the proportion of 1 part of Vichy to 3 parts milk. In some cases, when the milk was repulsive, koumyss or matzoon was substituted with very satisfactory results. This was the line of diet until convalescence was established, and even then great care was shown as to the giving of

solid food. The plan followed was to continue this line of diet for eight or nine days after the temperature had touched normal. I mention this fact because of our unfortunate experience in the attempts to resort to solid foods earlier in convalescence, as is the method followed by some excellent observers.

## CLINICAL LECTURE.

### VARICOCELE, MOVABLE KIDNEY, MAMMARY CARCINOMA, RECURRING APPENDICITIS.<sup>1</sup>

BY CHARLES MCBURNEY, M.D.,  
OF NEW YORK.

GENTLEMEN: I wish first to show you to-day two of the patients who were operated on last Saturday. This young man was operated on for the cure of a right inguinal hernia by Bassini's method and for a varicocele in the usual site on the left. The wound made for the radical operation of hernia is doing very nicely and no further comment is required. The varicocele operation has been equally satisfactory in its results. I did in this case the operation which I always now do in similar cases. After incising the scrotum and dissecting out the large plexus of distended veins, two catgut ligatures were placed around these vessels at a distance from each other of about two inches. Care was taken of course not to include in these ligatures the plexus which accompanies the vas deferens. The mass of enlarged veins between the two ligatures was then incised and the ends of the ligatures tied so as to bring the stumps in apposition. A few approximating stitches of catgut were also applied. We find now at the point of apposition an inflammatory thickening. This is a good sign and practically assures the success of the operation. I have never had any accidents with this form of procedure for varicocele and recurrences in my experience are practically unknown.

After his getting up, which I shall allow in about two weeks more, I shall not ask the patient to wear any supporting apparatus for his hernia. He may go without a truss. I shall, however, recommend him to wear a support for his testicles for two or three weeks in order to prevent the stretching of the recently united tissues.

#### MOVABLE KIDNEY.

The patient who was operated upon last Saturday was a young woman who had the typical symptoms of a movable kidney. There was almost continuous abdominal discomfort that at times became positive pain. There was persistent gastric disturbance, with nausea and loss of appetite, and there was constantly recurring headache and a readily movable tumor, evidently the right kidney, could be felt in the right loin. In the operation that I have found of most benefit in these cases, the only one in fact which seems to secure the patient against relapses, the incision is made, as in this case, parallel to the last rib and about one-half inch below it, here in the lumbar region. The incision is carried down to the perirenal fat, which is

<sup>1</sup> A clinical lecture delivered at the Roosevelt Hospital.



notched with scissors and then torn open, exposing the kidney in its capsule. The capsule of the kidney is split and stripped off from the organ for some distance; its cut edges being fastened to the deep edges of the muscular wound. The wound is then packed, the gauze being carried down to the kidney itself. The plan is to prevent union of the external wound by first intention and to set up a certain amount of irritation, that will cause the formation of new connective tissue around the kidney, and so fasten it to the abdominal wall. When we remove the gauze here, you can see the kidney very plainly at the bottom of the wound. Normal aseptic granulation tissue can be seen covering the exposed surface of kidney. Instead of moving up and down in wide excursions with the respiratory movements as it did before the operation, and as is usual with movable kidney before adhesions are formed, it now lies motionless. The patient of course will be kept as quiet as possible for about three weeks longer, when the adhesions will have become very firm. The external wound will then be allowed to close and I do not expect the patient to ever have further symptoms due to mobility of this kidney.

This operation is very safe. I have never had an accident with it, and I think it can be recommended with the perfect assurance that it will not give rise to any serious complications. These cases of movable kidney can be radically treated only by means of an operation similar to the one described. Since I did this operation I have seen a young woman who has suffered for nineteen years with aggravated symptoms of movable kidney. In her case the mobility of the kidney is due to a series of violent falls occurring at the age of seven years. It is very unusual for movable kidney to develop at so early a period, and only some uncommon cause could have led to it. In this case I assured the patient that practically all of her symptoms could be removed by the operation, that there would be very little risk, if any, and no danger of return.

#### CANCER OF BREAST.

Our next patient is a woman forty-three of age, who has had four children and who noticed a feeling of discomfort in her left breast about a year ago. This has gone on increasing. Examination disclosed the fact that there was not much pain, though there was some tenderness. The entire breast was densely indurated. The nipple was much retracted, dragged down into a deep furrow in the skin. Further examination showed that there were a number of enlarged glands in the axilla, though none could be found above the clavicle. In the skin around the nipple certain nodules, shot-like in character, could be felt. These signs taken in conjunction with the history permit one to make an absolutely positive diagnosis. We have to do here with a fibrous carcinoma of the breast.

Suppose we first ask ourselves what would be the natural history of the case if it should be left untreated. There is no absolute law by which we could foretell what length of life would be left to the patient, nor just what course the cancer would take in its development. It is

certain, however, that the disease inevitably progresses, and that the fatal termination would come in two or three years or less. In the meantime she would suffer a great deal from pain and mental distress, with disability of the arm and internal complications. Even if we foresee that operation is likely to be only palliative, it is still indicated in these cases. When we cannot promise a cure we can at least assure amelioration of the patient's condition, and some hope even that recurrence will not take place. We can never assure our patient's that operation in any given case will be followed by positive cure. Even small malignant tumors may already have given rise to metastases, which will later lead to inevitable diseases.

The characteristic of carcinoma which is most important is its tendency to disseminate itself through the body, making use for this purpose especially of the lymph channels. Because of this peculiarity a carcinomatous process very soon finds its way from the breast itself into the lymph passages leading from it, and at an early date is found in the lymph glands of the axilla. In a very large percentage of cases axillary involvement occurs very early. At a later stage the supra-clavicular glands become diseased. In certain cases the pectoral muscles are involved or the pleura is attacked. The lymphatic tissue in the anterior and posterior mediastinum may become infected. From here involvement of the viscera readily occurs.

These considerations modify the prognosis to a very great degree, so that practically in no case can we positively promise a radical cure. We are, nevertheless, usually able to afford a great measure of relief to certain annoying symptoms. We can, for a time at least, lift a load off the patient's mind, and in many cases by prompt and thorough work produce a radical cure. Our recognition of the methods by which carcinoma disseminates itself has led to marked improvement in these late years in the methods of operation, and this has largely increased the number of radical cures. It is, of course, an extremely unfortunate situation when the patient comes to us at a time when so much dissemination has already taken place that the hope of eradicating the disease and its outlying processes in the lymphatics is almost surely at an end. Yet even in these cases we can afford our patients so much relief that operation is usually indicated.

There is a period in every case of carcinoma when the affection is absolutely local. If all patients could be operated upon during this period the statistics of the results would be totally different from what they are. The sooner that operation is done after diagnosis is assured the better. The conclusion that must be especially impressed upon you is that the very earliest symptom of a possible cancerous growth must not be neglected. A positive diagnosis must be made either from physical signs, or from a microscopic examination after excision of a portion of the tumor. If this were done in every case we would not have to bewail our ill-success in operations for mammary cancer, and the statistics of our radical cures would rapidly improve. Unfortunately there is often some member of the family, sometimes the patient, sometimes even the family physician himself, who is ill-

advised enough to consider very early operation unnecessary. When this impression has been gotten rid of, the death-rate from cancer will notably decrease.

The operation for cancer must be planned with the recognition of its tendency to dissemination always in mind. Not only must the original tumor be removed, but also as much surrounding tissue as is possible without too great danger to life or too serious disability from mutilation. The lymphatic channels must be carefully followed and as far as possible thoroughly eradicated. This makes a large dissection necessary, but it is perfectly justified by the gravity of the condition and by the fact, now so well known, that this is the only course which gives any hope of permanent freedom from recurrences.

The incisions should be so arranged as absolutely to remove all skin overlying the tumor which could have been infected from the cancerous growth. In this case we have nodules of cancerous tissue in the skin to emphasize the necessity for this, but even in cases where such appearances are not so manifest the rule with regard to the removal of suspicious cutaneous tissue must always be borne in mind, for it is in the skin especially that recurrences are prone to take place. In making the incision and in removing the portion of the skin overlying the tumor, no regard should be paid to the fact that the skin-edges may not come together when the operation is over. This question is of very secondary importance.

As we know that the axillary glands are involved we shall remove all the connective tissue and all tissue containing lymphatic structures in the axilla. In order if possible to avoid the danger of recurrence from backward extension of the cancer we shall remove a large portion of the pectoralis muscles. To do less than this would be to do injustice to our patient. If we were to do more there would be first the risk from the seriousness of the operation and then the deformity from the mutilation and consequent disability. There are good reasons for limiting the operation to the tissues indicated. It seems but just to say that with this extensive operation for mammary cancer, which of late years has become so popularized, the name of that distinguished surgeon, Halsted of Baltimore, is intimately associated. He not only devised and developed the operation on scientific principles, but showed the profession the benefits that might be obtained from its application. To those of you who have never seen the operation before it may seem to involve too extensive dissection and mutilation. But if you should see the patient later on, you will find, first, that the recovery is rapid and is usually without incident; and, secondly, that the disability resultant from the removal of so much tissue is extremely small.

The incision that I make is carefully directed so as to avoid the leaving of a scar across the axilla. In the older operations for removing the contents of the axilla in cases of cancer in the breast, this scar was very prominent. Its contractile nature caused the tissues here to pull together, and interfered with movement of the arm. Instead of carrying the incision upward into the axilla it is directed more toward the end of the clavicle, and then is carried somewhat down the arm. It follows in general

the line of the pectoralis muscle. When the upper flap is dissected back it is easy to make a very thorough exposure of the upper part of the pectoralis major muscle. When the lower flap is dissected back to the posterior line of the axilla it is possible to open up the entire axillary space very thoroughly and without difficulty. This lower flap is made as thin as it can be without risking the vitality of the skin. If it is allowed to be too thick there is risk that cancer nodules from the axillary tissues may be included in it, and recurrences will be inevitable if the slightest bit of cancerous tissue is allowed to remain. Between these two extremes of a thinness which might be insufficient to nourish the cutaneous tissues, and so lead to gangrene of the skin, and a thickness that might risk the leaving of even a single cancerous nodule, the surgeon's experience must guide him.

As we dissect backwards here we begin to see the edge of the *teres major* muscle. This shows us that we have gone far enough in this direction. We make the incision well down to the layer of muscles. The pectoralis major and serratus magnus may now be seen uncovered at the bottom of the wound. It is necessary to go at least as deep as this. A very important part of the operation consists in guarding as far as possible against blood loss at this stage. I have never had a death from this operation, and it is always well borne, even by those who are not in very robust health. There are, however, a number of blood-vessels here in the deeper part of the wound which require to be carefully ligated. In dissecting back the upper flap it is advisable to keep as far away from the breast as possible so as to avoid leaving any cancerous tissue behind. Lymphatic ducts and glands at some distance from the breast are very liable to be affected. To leave any of them means inevitable recurrence.

The advantage of the incisions which I have made will be seen, especially when we come to the direction of the axillary space. By the old method, with the incision straight across the floor of the axilla, axillary tissues could be removed, but their complete excision was practically impossible. We have here at the upper angle of the wound the clavicular fibers of the pectoralis muscle laid bare. If we pass our fingers beneath these fibers we can cut through the muscle without danger, and when we do so the axillary space is laid open for a thorough dissection. We have the fascia underlying the pectoralis muscle still covering the contents of the axilla. This is carefully divided and the deep dissection begun. The axillary vein can be seen very plainly, and one should be specially careful of it. It forms the outer limit of the dissection, and in general all tissues inside of it must be taken away except certain nerves, which, because of their functional importance, we shall try sedulously to preserve.

At this stage of the work a number of pectoral branches of the veins and arteries are met with. Like all vessels situated somewhat deeply, these are very delicate and easily torn and they should be tied as soon as they appear. Now the pectoralis minor muscle comes into view and this is also divided, as doing so makes it much easier to get at underlying tissues. Dissection beneath the

muscle without section of it would be an imperfect procedure and one could not be sure that all infected tissues were removed. Thorough removal of such tissues is the one thing absolutely necessary.

It would not do merely to cut and seize with clamps the mouths of bleeding vessels at this stage of the operation and then let these lie as we do with the vessels nearer the cutaneous surface. All small vessels which lie deep in the tissues as these do, are, as I have just said, very delicate and easily torn. If clamps were allowed to hang on them, either the vessels themselves would tear or perhaps a hole would be torn out of the side of one of the main veins. This is, of course, an extremely undesirable complication and one that might have serious consequences. It occupies some time to pass an aneurism needle beneath each of these vessels and tie it before cutting, but it is very important that this should be done, as loss of blood is avoided, which is a most important consideration, especially in prolonged operations.

It is at this stage that we must look for certain important nerves. I have here the long, subscapular nerve, which supplies a very important muscle, the latissimus dorsi, and the nerve must be spared in order to preserve the function of this muscle. I clean the nerve thoroughly, remove all the connective tissue lying around it, but leave the nerve itself uninjured. I have now removed in one mass the entire contents of the axilla excepting the large vessels and nerves, and you can see here the bare surface of the serratus magnus muscle. After this we work toward the breast and continue to turn back, farther and farther, the pectoralis major and minor muscles. I remove the whole breast with the fatty tissue lying around it, the skin above it, the two pectoralis muscles, and all of the axillary contents. I do not cut the sternal attachment of the pectoralis major muscle close to the bone and intercostal spaces for, if I did so, the perforating branches from the internal mammary artery would be severed so close to the intercostal membrane that it would be very difficult to ligate them. It is best, therefore, to sever the muscle on a line about  $\frac{1}{2}$  inch distant from the muscular attachment to bone. The perforating vessels are thus cut quite long enough to permit of satisfactory ligation.

While it is not essential to drain these cases, I have always considered it advisable to leave a drainage tube in the wound for twenty-four hours. Not that I feared infection, but there is often some accumulation of blood. Tension is relieved, a very suitable culture medium for micro-organisms is removed, and the healing of the wound is favored. Besides this after the first sutures have been put in a thin strip of gutta percha tissue is inserted at each angle of the wound. While the wound would heal very well with only these interrupted sutures, it heals very much better, more evenly and more quickly, if the skin edges are carefully brought together by an apposition suture throughout the entire length of the wound. I must insist once more that the mere closure of the wound after operation is a very secondary consideration and not to be weighed at all in comparison with the desirability of getting rid of a possible focus of disease which

may exist in the skin. If a single cancer nodule is left in the cutaneous tissue it will be prone to develop into a serious lesion.

You have seen how much muscle has been removed in this case, and you probably think that considerable disability will result. If you should see this patient a few months from now you would be surprised to find that the movement of her arm, will be quite as good as that of the other. The clavicular fibers of the pectoralis major muscle and the anterior fibers of the deltoid are quite sufficient for function. Even the deltoid alone will suffice to accomplish these motions and I doubt that you would be able to distinguish by ordinary functional tests from which side the muscles were removed.

In dressing the wound a very efficient bandage is this many tailed bandage which we use here. It is similar to an ordinary many-tailed bandage with a wide, firm piece at the back, and then two tails that go over the shoulder from the upper part of the wide back-piece and one from below which comes up over the arm below the elbow. This secures the arm very completely to the body and effectually prevents all motion during the early days after operation.

#### RECURRING APPENDICITIS.

The next patient is a boy of eleven years, who has had several attacks of illness with a very definite set of symptoms. These symptoms were very characteristic. Severe abdominal pains were complained of during the first few hours of each attack, and at the end of about twelve hours the pain became distinctly localized in the right iliac fossa. Each attack was accompanied by some nausea, by fever, and by heightened pulse-rate. He had his first attack several months ago and recovered completely from it. But afterward he had a series of recurring pains mainly referred to the right iliac region. After about three months he had a second severe characteristic attack.

This boy first came under my observation about ten days ago, on the second day of his last attack. His fever on admission to the hospital was  $102.8^{\circ}$  F., his pulse-rate 124, and when he came here the pain had already become localized in the right iliac fossa. Excessive tenderness was noted at a point about midway between the umbilicus and the right anterior spine. I had no hesitation in diagnosing the case as appendicitis of that type which is known as recurring appendicitis.

The important question on his admission was, will this affection be progressive? was the inflammatory process likely to increase until a collection of pus had formed, or was there a reasonable hope that this attack would terminate as the others had done? These questions were not easy to decide. There are no general rules to guide one at the beginning of an attack of appendicitis in making the differential diagnosis between a case that may get rapidly worse and one that may rapidly subside. Needless to say, the question is a very important one for the patient and also for his attending physician. A practical decision must be made soon, and I find this about my own rule of practice. If the pain, vomiting, fever,



and pulse-rate continue to increase, or even remain unimproved for more than one day, or if I judge from my experience of such cases that the future behavior is very doubtful, I operate as soon as I can obtain permission. If at the end of twenty-four or thirty-six hours there is some remission of symptoms, then I prefer to wait further developments. Not that there is much more danger in operating in acute cases, though it must be admitted that there is some more. In the acute stage, however, we are obliged to make use of an inferior method of operation. We are not able to benefit the patient as surely and as effectually as when there is no danger of the acute localized process becoming generalized by our manipulation.

In this case I concluded that the symptoms were not over-active, the general appearance was not that of a patient seriously ill, the pulse was encouraging on his admission, and so I decided to wait. On the next day the fever had subsided. The following day he felt still better, and to-day you would say that there was nothing the matter with him, and you would only find on rather deep palpation some tenderness in his right iliac fossa.

The subject of appendicitis is too large for me to discuss all its features to-day, but I wish briefly to dwell upon certain practical questions that are of especial interest. First, as to the reason for operating at all, and, secondly, as to when operations should be done in such cases. The fact that a patient has recovered from an attack, or even from numerous attacks, is no guarantee that he would also recover from the next one. There is no assurance in the past for the future. A mild attack may be followed by a very severe one. On the other hand, a severe attack may not be followed by one that is more severe. Occasionally a patient will have one attack, then never have another. A patient may have two or even three attacks, and yet never have another. The occurrence of one indicates a liability to further attacks of the disease, but absolutely gives no definite information in any particular case. The next attack in any patient may prove fatal. Usually succeeding attacks are at least no milder than those that have preceded them. A patient with a damaged appendix has no assurance from attack at any time, and a fatal termination is at least possible.

Under these circumstances the only valuable treatment of the condition is the surgical one. No medical treatment will influence the condition of the appendix in the slightest degree. The diseased organ must be removed on the same principle that a poisonous foreign body should be removed from the body without waiting for it to give rise to general sepsis. The patient must not be advised to wait and see what will be the nature of succeeding attacks. Certain contraindications to the operation do exist. If the patient is very weak or very old so that he will not stand operation well, or if he is very fat, and these conditions would add materially to the difficulties to be encountered in the operation, then, perhaps, operation might be considered more dangerous than the disease. Such cases will rarely be found.

Now as to the character of the operation. Wherever we remove septic material from the body we close up the

cavity in which it has been contained only if we have been able to render the cavity perfectly sterile. We close up an abscess, for instance, only if we feel sure that we have dissected away the whole abscess wall. This is evidently impossible in the case of the peritoneum. Hence drainage becomes a necessity. If we employ drainage this leaves a weak spot in the abdominal wall. The granulation tissue that forms under these circumstances has not the strength of the ordinary tissues of the abdominal wall, and will yield to intra-abdominal pressure, and a hernia will result. This danger is always to be feared if we perform the operation in the acute stage. When our manipulations have included a part in which there has been for days before an acute inflammatory process we do not care to completely close the wound. The risk is too great. This is what we would have had to do had we operated on this little patient a week ago. Now, as you will see, we can very easily and effectually avoid this danger.

We make our incision through the skin in a direction parallel to the fibers of the external oblique aponeurosis. This structure is not to be cut, but one should split it and separate the edges of the opening. We then cut the muscular fascia lying above the internal oblique muscle and separate its fibers. The transversalis fibers here run nearly parallel to those of the internal oblique and these also are to be separated. It only remains to pinch up and divide the fascia transversalis and the peritoneum. By this method we have cut no important structures in the abdominal wall and have not weakened its resisting power. After cutting through the peritoneum we come upon the caput coli. As I do not care to make unnecessary manipulations I prefer not to insert my finger and feel about for the appendix, but gradually draw the cecum into the wound when the appendix will soon come into view. I do this, as you notice, cautiously for there may be slight inflammatory adhesions which it would be undesirable to tear. Here I have come upon the base of the appendix. I find in the organ evidence of a comparatively recent inflammation. There is a marked engorgement of the peritoneum covering it and some delicate adhesions due to only partially organized lymph on its exterior.

I now divide meso-appendix, tying it off in sections in order to avoid bleeding. The history of the case would lead us to look for some lesion either within or without the appendix that had lessened the caliber of the organ. There were well-defined symptoms in the recurring attacks of a spasmodic condition such as would be set up by some diminution in the lumen of the appendix and the collection of material behind it trying to force its way out.

The stricture in the appendix may be due to the formation of new connective tissue as in the urethra. This new tissue is under practically similar conditions, or the narrowing of the lumen may be the result of some distortion of the appendix from an external cause. The stricture causes symptoms because beyond the narrowed part either an accumulation of feces occurs, or in the detained fluid of the appendix infection takes place and bacteria develop. After this pressure symptoms progress.

When the bacteria increase in the retained substances there is an absorption of septic material and this causes the constitutional symptoms of the disease. The pain and the tenderness which usher in an appendicitis are due to the rapid development of septic material and the spasmodic contraction of the organ in the attempt to get rid of it. In cases that get well spontaneously the accumulated material forces its way out into the intestine and the remission of symptoms occurs just as soon as evacuation has taken place. A locus minoris resistentiae is left in the appendix, however, and in addition the original stricture remains so that attacks are liable to recur. Finally a time comes when the material imprisoned in the appendix cannot force its way into the cecum and then there is rupture of the appendix, or necrosis, because of interference with the blood-supply, by pressure of the accumulated material, and involvement of the peritoneum is the result.

In order not to leave any mucous membrane projecting into the peritoneal cavity, which would be dangerous because of its liability to retain infectious material and so infect the peritoneum, we invert the appendix into the cecum and bring the peritoneal surfaces together above it. In order to do this easily we dissect up a cuff of peritoneum and cut the fibrous and muscular coats of the appendix at a lower level, *i. e.*, nearer the bowel. We now test the permeability of the small stump that is left in order to be sure to leave no stricture between the amputated end and the cecum. The probe passes easily. With a purse-string suture we now gather up the wall of the cecum. I always invert the appendix into the cecum. For this purpose I use the little instrument that you see here, which has a shoulder on it. As I push it in, it inverts the stump of the appendix and I am able to draw it out leaving the appendix as a small projection on the inside of the cecum. I now pull the purse-string suture taut and tie it, leaving only a puckered spot where the appendix was. This I consider the best way of disposing of the appendix, and I acknowledge my obligations to Dr. Dawbarn of this city who devised this very ingenious and useful method.

I now close the incision, first suturing the peritoneum and fascia transversalis very carefully. The rest of the wound might really be left to take care of itself, but I draw the muscular fibers somewhat closer together than they would otherwise fall and retain them in this close apposition by a few sutures. I put some sutures also in the aponeurosis of the external oblique muscle. It is very interesting to see the condition of an opening like this, if nausea occurs during the operation. Ordinarily there is pouting of an abdominal wound under such circumstances, but when the opening is made like this one, all of the muscular fibers surrounding it contract and instead of pouting and opening up there is contraction and the opening in the abdominal wall is shut up tight.

I shall now open this specimen, which has been removed in order to demonstrate to you the condition that exists in it. I try to pass a probe and find that it meets with resistance a little beyond the middle of the appendix. Careful, gentle manipulation of the instrument, though

continued for some time as you see, fails to get us beyond this point. I now carefully open up the appendix as far as the probe penetrated and can demonstrate to you the stricture that exists. Even now I am unable to pass the probe. Taking a finer instrument I succeed with the aid of vision in getting it past the obstruction. The stricture though tight is still permeable and thus accounts for the remission of the symptoms in the last attack which took place. I now open up the appendix beyond the stricture and find the lumen greatly dilated and containing some dirty purulent fluid which is undoubtedly septic and which would doubtless prove on careful investigation to contain dangerous micro-organisms. When I now cut through the stricture itself, you can see that we have here a very perfect example of a stricture of the appendix which closely resembles a stricture of the urethra. The lesson is a most interesting one and the demonstration of the specimen should, I think, prove to conviction what the pathological lesion is in many cases of recurring appendicitis and how inevitably necessary operation becomes sooner or later.

## CLINICAL MEMORANDUM.

### LARGE PERINEURAL FIBROMA INVOLVING THE ENTIRE SCIATIC NERVE-SHEATH.<sup>1</sup>

By RUDOLF MATAS, M.D.,

OF NEW ORLEANS, LA.;

PROFESSOR OF SURGERY, MEDICAL DEPARTMENT, TULANE UNIVERSITY OF LOUISIANA.

THE following unusual case of a large perineural fibroma involving the entire sciatic nerve-sheath and deep femoropopliteal fascia appeared of especial interest to me from the fact that extirpation of the tumor and popliteal vessels was performed, leaving the sciatic nerve uninjured, *in situ*, and recovery took place, with the loss of only the toes and heel-covering from sloughing.

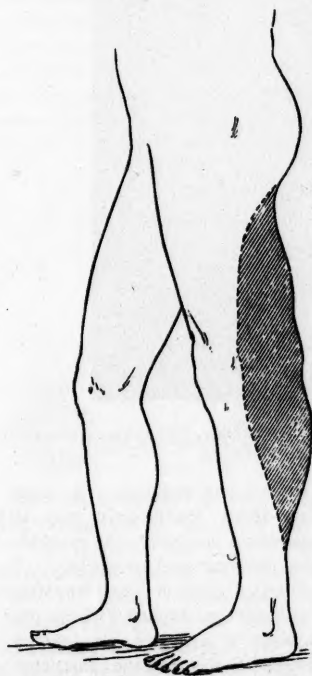
The patient, C. B., a light mulatto, was a native of Louisiana, aged twenty-two years; a steamship waiter by occupation. He was distinctly tubercular on the maternal side. His personal history was good as far as habits and previous diseases were concerned. There was no history of traumatism, nor other conditions that might suggest a cause of the present trouble. He was admitted to the Charity Hospital of New Orleans, April 1, 1898, for the relief of a large tumor of the right lower limb, which had gradually developed since the age of twelve (ten-years' duration). The patient was pale, anemic, marasmic from prolonged inactivity, indoor life, and bad hygienic surroundings. He had been losing flesh progressively, and now weighed only 120 pounds, notwithstanding his height which was six feet. The large size of the right lower limb was striking to the eye on account of its great size, markedly contrasting with the opposite member which was thin and atrophied. (See Fig. 1.) The affected limb was enlarged from the lower gluteal fold to the toes. The enlargement was most marked posteriorly, where it projected in prominent relief

<sup>1</sup> Preliminary report presented to the American Surgical Association, annual meeting held at Chicago, May 31, 1899.

from the femoral, popliteal, and crural regions. The tumor increased progressively in size from the tuberosity of the ischium to the center of the popliteal space, where it attained its greatest dimensions, and from this point again decreased until it reached the malleoli. The leg and foot were cylindrical in outline, the normal contour of the ankle having been obliterated by edema which was evidently caused by mechanical compression of the popliteal vessels. The tumor originated primarily in the popliteal space as a slow, indolent, hard, painless swelling which in no manner interfered with the function of the limb until three years ago, when it filled the space back of the knee so completely that flexion was impossible. About the same time it was noticed that the growth had extended up the thigh and down into the calf, but it was not until one year later that edema and weakness of the leg began.

The actual length of the growth as it was felt through the skin was 42 cm. (17.5 inches), and it extended distinctly along the sciatic tract from the tuberosity of the ischium to the middle of the calf. It projected behind the popliteal space from one hamstring to the other, 21 cm. (9 inches). The circumference of the affected limb around the knee was 49 cm. (19.5 inches); of the sound limb 36 cm. (14.5 inches). The same proportional difference was observed in comparing the normal and affected

FIG. 1.

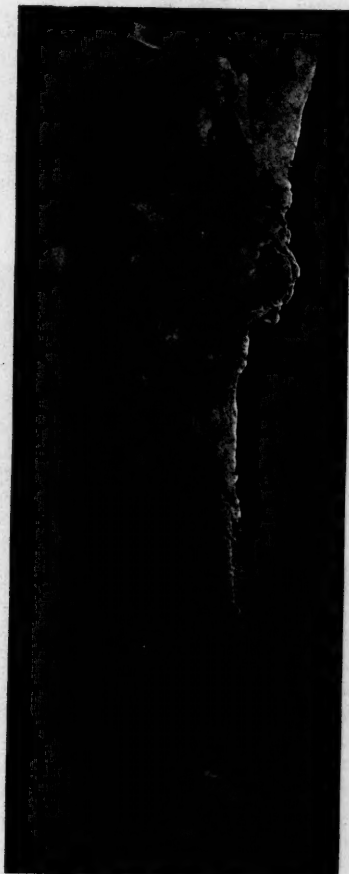


limb at various points in the circumference of the thigh and leg.

The skin overlying the tumor was thin, adherent, fixed, and immovable; the underlying mass was hard and nod-

ular, especially in the popliteal space and calf. There was no pain on pressure or spontaneously. There was some edema in the skin of the leg, and a small superficial ulcer above the ankle; no trophic lesions or disturbances

FIG. 2.



Perineural fibroma of the sciatic, involving the femoropopliteal space.

of sensibility could be detected in the foot or leg. The neoplastic area was defined externally by a line drawn from the great trochanter to the external condyle of the femur and middle of the fibula; internally by a line from the tuberosity of the ischium to the internal condyle and middle of tibia. Scarcely any motion was obtained by manipulation, the growth being very deeply rooted to the posterior ligament of the knee, sural and hamstring muscles, and periosteum of the femur.

A cubic fragment of tumor was removed from the popliteal space under cocain anesthesia, and the diagnosis of pure fibroma was established. On May 18, 1898, the tumor was extirpated, *en bloc* by a careful dissection which extended from the tuberosity of the ischium to the middle of the calf; the incision measured about 54 cm. (24 inches). The tumor, which was a white, dense, extremely hard, and resisting mass, had to be removed by

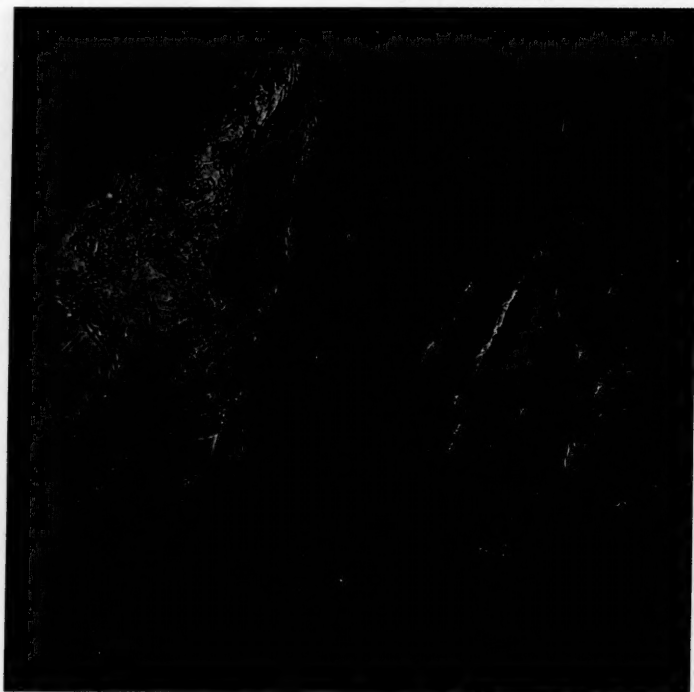


a process of slow and tedious dissection. It was impossible to enucleate or shell it out of its surroundings; it had no capsule; it blended everywhere most intimately with surrounding tissues. When removed it measured over seventeen inches in length, and weighed a little more than three pounds. (See Fig. 2.) It was hard, bloodless, and creaked under the knife. The origin of the tumor from the sheath of the sciatic nerve was clearly ascertained, and the greatest difficulty was experienced in separating it from the nerve. In the popliteal space the mass had so completely wrapped itself around the popliteal artery and vein that all efforts to save these vessels had to be

been abandoned, believing that sloughing of these parts would be inevitable. Nevertheless, after securing all bleeding-points and removing the constrictor it was observed that the foot and leg gradually lost the waxy cadaveric appearance, and that the color and sensibility of the skin of the foot had returned. All pulsations in the pedal arteries ceased, but the color of the skin encouraged us to hope that a sufficient collateral circulation existed to prevent the total mortification of the leg.

The limb was carefully wrapped up in a copious cotton-wool dressing to keep it aseptic and warm, and the vast wound in the thigh and leg was closed with

FIG. 3.



Photomicrograph of perineural fibroma of sciatic nerve. (Prepared by Dr. O. L. Polthier, Pathologist, Charity Hospital, New Orleans, La.)

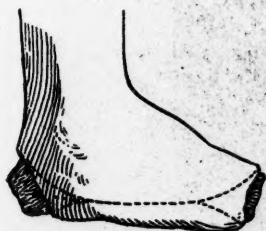
abandoned, and more than three inches of each had to be removed. The artery being cut off right down to the level of the bifurcation, and with it part of the posterior ligament of the knee, with which the tumor had contracted inseparable adhesions, had to be excised, thus exposing the knee-joint. The peroneal and internal popliteal nerves had to be literally dissected—carved out—from the mass in which they were embedded. The gastrocnemii and soleus muscles also intimately blended with the mass, at their origin, and part of these muscles, with the corresponding sural and articular branches of the popliteal vessels, had to be sacrificed. At this stage of the operation all hope of saving the foot and leg had

interrupted sutures and drained. A long posterior, padded, gutter-splint (cardboard), and large aseptic dressing immobilized the limb. The prophylactic hemostasis was very complete and satisfactory. Before operating the limb was drained of blood by elevation, and an Esmarch constrictor was applied high up over the groin and held in place by a Wyeth pin inserted above the great trochanter. In this way the constrictor was held up very high in the hip and prevented from slipping. Notwithstanding complete hemostasis the shock was profound, and the pulse ran up to 160, and was very feeble (the duration of the operation had been over one hour and a half). Three quarts of saline solution were

at once injected in the basilic vein, and the pulse fell to 120 and became full and strong.

A careful examination of the tumor was made by Dr. O. L. Pothier, Pathologist of the Charity Hospital, and many sections were cut from different portions of the growth. The bulk of the mass was found to consist "of a dense fibrous tissue of the adult type originating from the neurilemma of the sciatic and its branches." (See Fig. 3.) In many of the sections examined nerve-filaments were found very much distorted by a hypertrophic sclerogenic process, and totally surrounded by dense fibrous tissue.

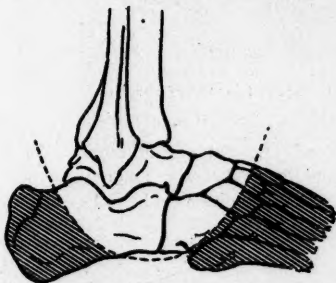
FIG. 4.



Here and there is the periphery of the growth, round, young, connective-tissue cells could be recognized in a state of transition to the adult forms. The growth of the fibroid tissue had been in many places interstitial, but the tendency of the fibroid process had been to grow excentrically and to invade the perineural connective tissue; this with the fascia and intermuscular septa soon participated in the process, and, in turn, attained huge proportions in consequence of progressive hyperplasia.

The next day the pulse stood at 140 and the temperature

FIG. 5.



103.5°. The foot, including the toes, could be moved freely by the patient, but all sensibility had left the toes and heel. The toes had also become markedly pale. Ecchymotic spots were noticed over the heel and in a small area over the tarsus. These spots, together with the toes, became subsequently the seat of a leathery, odorless, dehydrating mortification. The general condition of the patient rapidly improved, and three weeks after the operation the sloughed parts were removed with scissors. No attempt was made to shape the stump. The heel and toe surfaces were gradually covered with indolent granulations, but the healing process was very slow. Co-

incidentally with this indolent effort at repair, signs of trophic and vascular disturbance (*viz.*, diminished sensibility, with redness and sweating in the sole of the foot, accompanied by "burning" pains in the plantar surfaces or "erythromelalgia") became pronounced, and annoying symptoms of neural lesion were unmistakable. Early in March, 1899, an atypical conservative operation was performed with the view of remodeling the stump and providing a suitable covering to the heel and toe regions. An external curvilinear incision was made on the dorsum of the foot, extending from the tendo-Achilles behind to the base of the metatarsals in front. (Fig. 4) All the plantar structures were reflected in a single massive flap, including the vessel and nerves, from the skeleton of the foot, the bones of the tarsal being laid bare on the plantar surface. The skeleton of the foot was then reduced to the requisite size and shape by sawing the tuberosity of the calcaneum, part of the cuboid, and the cuneiform with the metatarsals. (The line of osseous section is indicated in Fig. 4) In this way an ample covering of healthy plantar and dorsal flaps was obtained to cover the stump. In the course of this dissection the plantar nerves were exposed at their origin from the posterior tibial and stretched (as suggested by Chipault for the treatment of perforating trophic ulcer of the foot), hoping that by this procedure the erythromelalgia of the sole would be relieved. A very excellent, painless, and well-nourished stump resulted from this operation. The line of incision healed with remarkable rapidity and scarcely any suppuration. The vascular and neuralgic symptoms which had proved so annoying before the operation disappeared altogether, and the patient was soon able to leave the ward in excellent condition. He is now better than ever before, having gained remarkably in flesh and strength in consequence of his ability to enjoy outdoor exercise. When he last called to see me, in April, 1899, he was able to walk on the stump without pain or inconvenience, and had good normal motion at the ankle-joint. It is quite possible that with further exercise he may still have a recurrence of trophic symptoms in the foot, as the amputation is too recent to test the permanency of the recovery, but the result thus far obtained is certainly strikingly favorable and most encouraging. (Fig. 6.)

The points of interest presented by this case are:

1. The existence of a primary perineural fibroma originating in, and involving the entire sheath of the sciatic and its branches.
2. The diffusion of the fibroid process throughout the posterior aspect of the thigh and popliteal connective-tissue planes, without definite encapsulation, forming a hard, dense tumor of vast proportions.
3. The preservation of the entire sciatic nerve-trunk and its large popliteal divisions in spite of the intimate blending of the neoplastic tissue with the neurilemma which was incorporated in the tumor, and was completely surrounded by the mass throughout its course, more especially in the popliteal space.
4. The slow and painless growth of the tumor—ten years.

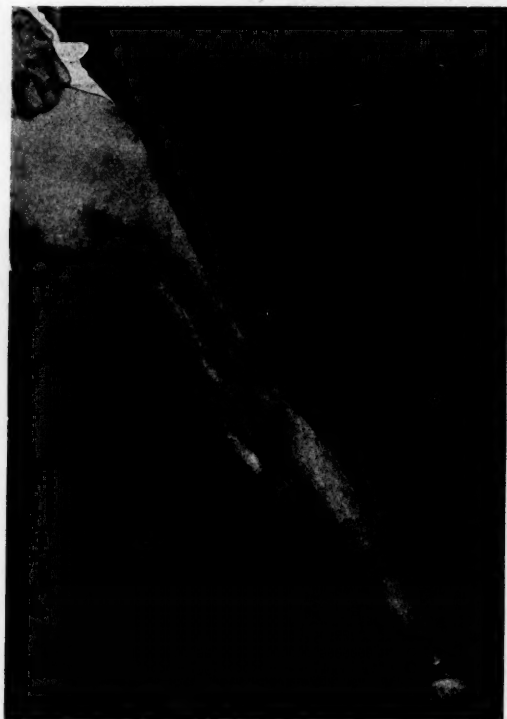
5. The involvement of the vascular sheaths of the popliteal blood-vessels in the tumor, which made it impossible to dissect the vessels out of the mass.

6. The extirpation of the tumor and excision of more than three inches (7.5 cm.) of the popliteal artery and vein.

7. The comparatively small area of popliteal slough-

otic and cold, with a pulse of 96 and a slightly subnormal temperature. She was given aromatic spirits of ammonia and strychnin and hot drinks, and in 24 hours the cyanosis had disappeared, and the pulse and temperature returned to the normal. Examination of the powders showed that they contained a large quantity of acetanilid. The writer expresses himself most strongly

FIG. 6.



Appearance of the limb and cicatrix, showing the extent of the dissection required for the removal of fibroma of the sciatic. The appearance of the foot stump after healing is also shown.

ing (toes and heel) that followed the total excision of these vessels and many collateral branches.

8. The useful walking stump left to the patient, after a secondary partial and atypical amputation of the tarsus to remodel the stump.

9. The general good result as regards serious trophic lesions from injury to the sciatic nerve, which is an encouragement to conservative efforts in similar cases.

3255 ST. CHARLES AVENUE.

## MEDICAL PROGRESS.

**The Dangers of Headache Powders.**—SOBEL (*Med. Record*, Sept. 30, 1899) reports an instance in which a school teacher aged 25 years was severely poisoned by taking powders of a proprietary character which according to the label did "not contain morphine, opium, antipyrin or any other dangerous drug." The patient became very cyan-

against the indiscriminate self-administration of headache remedies and says that the amount [of the dangerous drug placed in one powder ought to be limited by law.

**Failure of Operative Treatment of Abdominal Tuberculosis.**—WUNDERLICH (*Archiv für Gyn.*, vol. 59, p. 216) reviews the dark side of laparotomy in the treatment of abdominal tuberculosis. So many instances have been reported in which complete recovery has followed simple abdominal section that one is apt to lose sight of the failures which result from this method of treatment. These failures are numerous, however. For example, during the last eighteen months Wunderlich had opportunity to observe ten patients upon whom abdominal incision was made. Of these ten, seven were in no way benefited and the process either continued undisturbed by the operation or the patient was directly injured by the same. In no instance was death directly due to the operation but in one the patient died within six days. The cicatrix under



went tuberculous degeneration with the formation of a fecal fistula. Altogether four of the patients died within three months in spite of the fact that two of them left the hospital in apparently perfect health. One patient who did not die suffered from a fecal fistula which formed in the scar within two weeks of the operation. These instances are sufficient to show that one may not speak of a cure of abdominal tuberculosis until several years have elapsed. Examination of hundreds of reported cases showed the writer that a recovery after abdominal section is most likely to occur in the ascitic form of the disease. In this form the patients who lived after the operation three years or more without a return of the symptoms numbered 23.3 per cent.; whereas only 9.8 per cent. of those who suffered from the adhesive form of the disease could be regarded as cured after abdominal incision. There is no doubt that the curative effect of laparotomy upon peritoneal tuberculosis is vastly overestimated. Indeed, one is almost justified in denying that laparotomy has any curative effect, since cases are recorded of spontaneous cure without any operation.

*Increase in Weight of Infants Fed Artificially.*—KOPLIK (*Arch. of Pediatrics*, Oct., 1899) says that infants fed artificially must not be expected to gain weight with the same regularity as do breast-fed infants. By a series of observations extending over nine years he found that when artificially fed infants are doing well they have a daily gain in weight ranging between twelve and thirty-two grams (half an ounce to one ounce). Most of the infants whose weights were taken lived in tenement-houses and many of them in distinctly bad hygienic surroundings. The fact that children under such circumstances often suffer from more or less severe attacks of indigestion would account for a part of the irregularity in their gain in weight. In private practice the figures are somewhat more uniform, but even then there is a great variation from week to week. Cammerer has shown that when infants are fed upon the breast there is an almost constant increase ranging between four hundred and six hundred grams (fifteen to twenty ounces) a month. Koplik brings out the interesting point that if an artificially fed infant is given the breast two or three times in the twenty-four hours or even only once during the twenty-four hours, it will show a much better average daily increase than a baby fed on the bottle alone. Thirteen babies who weights were tested daily under such circumstances closely approximated the figures given by Cammerer for exclusively breast-fed infants.

*The "Rational" Treatment of Typhoid Fever.*—PAGE (*St. Louis Med. Gaz.*, Oct., 1899) criticises the manner in which cold baths are used in the treatment of typhoid fever, saying that they should never be employed for the purpose of directly reducing the temperature but in order to remove the cause of fever and pain. This can never be accomplished by the use of antipyretic drugs. In addition to the cold baths of which the writer gives sometimes as many as six the first day, the patient is kept on a strictly water-diet for several days until he is

convalescent and actually hungry. During this time absolutely nothing is given but soft, fresh water in large quantities. In every case of extremely high temperature there is practically a loss of all the dissolving and preserving fluids, saliva, gastric juice, etc., and in place of digestion there is only fermentation and putrefaction of ingested food with consequent blood-poisoning. This is the explanation of the unsatisfactory results obtained by some physicians who have made use of the cold bath, the advantages of the bath in their hands having been overbalanced by the disadvantages of the food given as many physicians employ forced feeding as a routine practice. If no food is given it will not be necessary to continue the baths in most cases for more than a few days. Page gives the history of a patient, to whom six baths were given the first day, and two on the second day. It was not found necessary to give any baths after that, and in a week the patient was thoroughly convalescent.

*A New Method of Reducing Dislocations of the Lower Jaw.*—MCGRAW (*Med. Record*, Oct. 7, 1899) was called upon to treat a patient whose jaw had been dislocated by a fall in a paralytic stroke five months previous. The dislocation was bilateral. Protracted efforts to effect reduction under ether failed. A week later the patient was again etherized and a short incision under each zygoma was made. A small steel hook with a short prong bent so as to run parallel to its shaft was passed through the skin incision and the fibers of the masseter, and over the jaw-bone above the sigmoid notch, until the hook fastened around the neck of the jaw-bone in front of the condyle. Pieces of cork were then inserted between the molar teeth as far back as possible and an assistant pulled the jaw forward and upward with all of his force while McGraw made traction upon the hook. This was continued for fifteen minutes. The only results was to move the bone slightly. A similar operation was performed on the left side and the operator then succeeded in dragging the head of the bone back into its proper position. The incisions required were very short. Made in the proper place it is only necessary that each incision should be long enough to permit the entrance of the hook.

*Dyce Duckworth on Bread-Making.*—In a letter communicated to *Food and Sanitation*, this celebrated physician expresses his contempt for modern bread in the following manner:

"On my return to Scotland," he says, "I am always pained to find that the art of bread-making has much fallen below its former preeminence, and I am told that the public now clamours for raw, uncooked bread, and will have no other. Each time I come back to Campbelltown I have to educate my baker to prepare for my family bread properly fired, and I see that I get it. Not a loaf in any shop in the town would pass my inspection. The mischief which results from this uncooked bread is very serious. In this as in other cases, an ignorant public has its way, and the unwholesome demand is met by the supply of a half-cooked loaf. One result is plainly obvious, and that is the bad condition of the teeth of all

classes. With no hard crusts to chew, no vigor and health for the teeth, no adequate supply of saliva for digestive purposes, hence attendant degrees of indigestion. Artificial teeth, thus rendered necessary, of course increase the demand for raw crustless bread, and so all works in a vicious circle.

"It is surely sufficient to point out facts like these to intelligent Scotsmen and Scotswomen to secure a change for the better, and to enable the bakers to practise their business as they well know how. Extra firing till the crust of the loaves is almost brown, and three-sixteenths of an inch thick, is what is requisite. This is no 'fad,' or matter of fashion, but a necessity for all time."

## THERAPEUTIC NOTES.

*Treatment of Malaria by Inunction of Creosote.*—FITZGERALD (*Brit. Med. Jour.*, July 15, 1899) has treated a number of patients with a mixture of creosote and olive-oil, 1 part of the former to 3 of the latter, using from 15 to 20 minims of creosote for a child and 30 to 60 for an adult. The results were remarkably uniform. In the patients who had already been treated with quinin, there was an immediate improvement and no relapse, but owing to the previous treatment the creosote could only be looked upon as an adjuvant to the quinin. In another class of cases consisting of adults to whom quinin had not been administered recovery was equally prompt. The temperature became normal in a few hours and remained so and there were no relapses. In most instances only one application of the creosote was made. In a third class of cases consisting of children some of whom had previously received quinin, the effect was even more striking than in the case of adults. For instance, a child aged three and a half years had a temperature of 105.4° F. taken in the groin at 11 P. M. For two days she had had a high fever and would take no medicine. She was quite delirious. Twenty minims of creosote were rubbed in at once, and the effect was almost instantaneous. The delirium ceased rapidly, consciousness returned, there was great irritability for a few minutes and then the patient became quiet and soon fell into a sound sleep lasting two hours. In half an hour from the administration of the creosote the temperature had fallen three degrees. At seven o'clock the next morning it was 100° F.; at ten o'clock it had risen again to 105° F. and convulsions were beginning. Twenty minims of creosote were again rubbed into the skin and immediate relief again followed. This treatment was repeated five or six times in the course of the next twenty-four hours. The following day the temperature was normal and remained so. The writer looks upon this treatment of malaria in children as ideal. Even in very severe cases it acts rapidly and continuously and, as far as he has observed, with absolute certainty. No bad effects have been noticed as a result of excessive use of the drug.

*An Effective Treatment of Vesical Hemorrhage Due to Papillomatous Growths*—HERRING (*Brit. Med. Jour.*, July 29, 1899) says that if a patient is suffering from vesical

hemorrhage due to papillomatous growths a diagnosis can usually be made by washing out the bladder with sterile water and at once mounting the shreds of debris for microscopical investigation. If the diagnosis is a positive one the daily injection of solutions of nitrate of silver will suffice to control the hematuria and in some instances may completely cure the condition. Four ounces of warm water containing one-half grain of the nitrate suffice for the first injection. The strength should be increased every day or two until the four ounces contain one and one half or possibly two grains. The susceptibility of the patient's bladder should be the guide. He ought never to feel pain but only a warmth in the vesical region which should subside entirely in half an hour. The solution should not be so strong as to cause frequency of micturition. When the maximum strength has been determined the irrigations should be continued daily for a few weeks. If bleeding has then ceased the patient may use the injections every other day for six months, and after that every third day for a variable period. Finally, treatment may be abandoned but should immediately be resumed if hemorrhage recurs. It is needless to add that strict asepsis should be observed in these cases as a septic cystitis in a patient with papillomata of the bladder is a most troublesome condition.

*A Dental Hemostatic.*—Mix 2 parts chloroform with 100 parts water. Use after extraction of teeth.—*Spaak.*

### For Hemoptysis —

B Ext. hydrastis fl. } aa. . . . . ʒ ss.  
Tinct. hydrastis. }  
M. Sig. Twenty to 50 drops three times a day.

In addition to its hemostatic action, the above has a good effect on appetite and digestion and never nauseates. In case of obstinate cough the addition of codein or morphin is recommended as follows:

1. B Ext. hydrastis fl. } aa. . . . . ʒ ss  
Tinct. hydrastis. }  
Codeinæ . . . . . gr. v-viii.  
M. Sig. Twenty to 50 drops three times a day.  
2. Ext. hydrastis fl. } aa. . . . . ʒ ss  
Tinct. hydrastis. }  
Morph. hydrochlor. . . . . gr. iiss-v.  
M. Sig. As above.

The treatment should be continued for several days after the hemoptysis is arrested, and the dose then be rapidly diminished. It is important that the preparations used should be fresh.—*Scarpa.*

*Elimination of Toxins by Means of Salivation.*—LEUBE of Würzburg, having observed a case of ascites which was relieved by a copious flow of the saliva, tried the effect of salivation in a number of cases of effusion (pleuritic and ascitic), and found that resorption of the fluid began immediately after the treatment, which consisted in the use of chewing-gum, was instituted. He considers that while the kidneys and skin are taxed to the utmost in the effort to cause the elimination of poisons, the salivary glands are usually overlooked, and suggests that salivation should be tried in addition to diuresis and diaphoresis in the treatment of hydrophobia.

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SATURDAY, DECEMBER 9, 1899.

## HOW TO QUARANTINE AGAINST THE PLAGUE.

THE recent appearance at Quarantine in New York harbor of a ship hailing from Santos, Brazil, laden with coffee, and having on board two cases of bubonic plague, has raised the question in a most practical way as to what quarantine requirements are necessary to allow the ship pratique. The two patients were placed in the quarantine hospital and the rest of the crew in detention-quarters for disinfection and observation; the ship was thoroughly disinfected, and the coffee placed in bulk on lighters and exposed to the air for eight days. Quarantine Officer Doty considered these sanitary measures sufficient to obviate all danger of infection and passed the ship and cargo through quarantine.

The New York City Board of Health, however, insists that there is at present no known method of disinfection that will guarantee immunity in such circumstances; has notified the consignees of the ship that the vessel cannot come to any dock in the city, that it cannot pass by the city, and that the coffee cannot be landed even from the lighters. In order to insure the execution of these orders, the police patrol boat has been placed on guard to watch

the lighters and the ship. To add to the complication two other ships have arrived from Santos, loaded with coffee. It is also reported that ten more coffee-laden ships are now on their way to New York from the plague-tainted port of Santos.

The success that has been attained at Singapore in preventing the entrance of plague into that port, and the quarantine measures that have been applied in accomplishing this end, may throw some light upon the question at issue. The *British Medical Journal* of November 25th in speaking of this says: "A very remarkable feature of the plague in the East is the immunity which Singapore has enjoyed, notwithstanding its communication with infected ports."

The system adopted for dealing with ships arriving from infected ports was to anchor them at the quarantine station, where the passengers and crew were inspected by the Health Officer, after which the passengers were landed at an island, and there detained until nine days had elapsed from the time they left the infected port. The ship was disinfected if necessary, and allowed pratique. Not only was this inspection duty of a very onerous nature but the opportunities for bringing infection were very great. Vessels from China at times brought from 3000 to 4000 coolies, each of whom had to be personally examined before being permitted to land, and attempts at concealment of illness were frequent. The numbers inspected were—in 1895, 195,633 passengers and 11,438 crew; in 1896, 145,814 passengers and 43,457 crew; in 1897, 115,542 passengers, and 12,573 crew; and in 1898, 144,686 passengers and 12,571 crew. In each year a number of plague cases were detected and isolated, and in the first seven months of 1899 ten such cases were dealt with in addition to five that were doubtful.

"The experience of the five years," says our authority, "showed that the risk of plague infection from certain cargoes coming under the category of susceptible is practically nil, for owing to the vast amount of commercial business done at the large ports of Hong Kong and Singapore, no disinfection of cargo was attempted; yet no case of plague occurred in Singapore from the admission of susceptible cargo, or from its being unpacked, packed, or handled."



This experience at Singapore provided the *British Medical Journal* is in possession of all the facts seems to justify Health Officer Doty in the position he has taken. The journal, however, does not affirm that there have been no cases of plague in Singapore but that "no case occurred there from the admission of susceptible cargo." If cases have existed there as reports show they have, it might be difficult to establish the statement that none of them came from any of the "susceptible" cargoes. The condition at New York is too serious a matter for the application of any experiments and until safety is established beyond peradventure of a doubt it is well to wait.

#### THE GENESIS OF THE ALBUMINS IN ALBUMINURIA.

WITHIN recent times it has become a fact of general recognition that the urine of patients suffering from albuminuria contains more than one variety of albumin, and extended research has shown that at least three albumin compounds are to be borne in mind. These most important bodies are serum albumin, serum globulin, and nucleo-albumin. With the definite appreciation of what these bodies are, the further knowledge of where they come from is, however, not so clear; and what the functional changes in the kidneys may be, which are correlated with the chemical variations of its secretions, is a subject that has invited much speculation as well as experimental investigation, with as yet but contradictory results. Such is not to be unexpected when fully acquainted with the intricacies of the question involved, as Senator's monograph on diseases of the kidney evidences.

With the determination to ascertain, if possible, the causes for the elimination of each of these bodies, M. Cloetta of the University of Zurich (*Arch. für Pathologie und Pharmakologie*, 42, 1899, p. 452) contributes a series of clinical observations, experiments, and pathological studies. Albumoses, peptones and other well-recognized constituents are not included in the general discussion since their pathogeny is fairly well established.

The methods of experimentation employed were various but most of them depended on the relationship of the bodies found in the blood and in the urine following some definite method of kidney irritation. Experiments making use of osmolytic

phenomena were also freely employed. These latter seemed to show that the character of the transuded albumin depended in large part on the thickness and permeability of the osmotic membrane, and thus pointed directly to the suggestion that in the kidneys themselves, the thinner the epithelial layers, the transudate more closely resembles the composition of the incoming fluid, *i. e.*, the blood in certain of its albumin constituents. The thicker membranes render the passage of globulins more difficult. When, with this result is borne in mind the clinical experience, that in acute nephritis the serum globulin is quite appreciable, and that on the other hand the serum albumin quotient is much higher in chronic contracted kidney, and that as recovery gradually takes place in acute nephritis the serum albumin increases, it may be seen that some correlation may be made between clinical and experimental results. Irritation of the kidney substance by means of injections of aloin, in guinea-pigs, has also brought about suggestive results.

With reference to the presence of nucleo-albumin the author is of the opinion that it comes not so much from the blood-current as from the renal epithelium itself. Thus in the acute degenerative types of nephritis it is nearly always present and comes from the degenerated cells of the tubules; in chronic indurative cases it is found in small quantities only. In cases of eclampsia it is also absent, whereas in the nephritis of the acute infectious diseases nucleo albumin is found in large quantities. It thus serves as an index of the amount of cellular degeneration in the renal structures.

#### THE RAILROAD SURGEON AS A FACTOR IN MODERN LIFE.

THE recent meeting of the New York State Association of Railway Surgeons, a brief account of which appears in our columns this week, calls attention once more to the duties that railways owe to their patrons in the matter of prompt, efficient, and expert medical and surgical assistance in case of accident. Important railroads entering New York City, following a lamentably shortsighted policy, have no organized corps of surgeons ready to answer their emergency calls. A certain number of accidents on railroads are practically inevitable. To save suffering and the serious consequences that may

result from delay in treatment or unskilled first aid to the injured is evidently an important duty of the railroad company. This should be insisted on by patrons of these dilatory lines.

The question of the physical fitness of railroad employees is of great interest and importance. So much depends on the eye or the ear of the railroad employee that it is important that these organs should be tested carefully on entrance into the service and continuous supervision be exercised at stated intervals. Where large numbers of men are employed occasional examination by a neurologist would also seem to be demanded in the interests of both the company and the traveling public. This may seem a refinement to those who have not considered the subject, but it has been known more than once that men liable to occasional attacks of epilepsy have held the position of switchman or signalman, and it is to this that accidents may occasionally be undoubtedly attributed. Epilepsy, as is well known, develops in some instances late in life, and gives no warning of its approach except to the skilled specialist. There are, moreover, the various forms of mental aberration, whose fatal consequences can only be anticipated in the same way.

During the past year a number of the English, French, and German railroads, following the example set by certain progressive American lines, whose surgeons first saw the usefulness of it, have equipped their cars with first-aid packets, practically the same surgical dressings as are supplied to soldiers in the field. Employees are being drilled in the simple principles of first aid to the injured. If this should have no other result than to prevent the meddlesome interference that so often does harm every surgeon will readily appreciate its possibilities for usefulness.

We have entered upon a phase of modern life when every detail that foresight can provide to lessen danger and decrease human suffering is welcome as part of the great modern advance in humanitarianism.

These details of medical service may seem trivial in comparison with other great interests and the fortunately rare necessity for their application in our day may lead to their neglect, but the duty in the matter is plain.

**Cadiz Infected.**—It is reported that one bona-fide case of bubonic plague has developed at this place.

## ECHOES AND NEWS.

**Professor Lenhossak** of Tubingen has been called to occupy the professorship of anatomy in the University of Budapest.

**Dr. Born Elected Professor of Diseases of the Eye at the New York Polyclinic.**—At the last meeting of the Faculty R. O. Born, M.D. was unanimously elected to the professorship of ophthalmology.

**Smallpox at Ohio Wesleyan University.**—A student in the Girl's Seminary of the Ohio Wesleyan University, at Delaware, O., was taken ill with smallpox November 28th, and, immediately her disease was made known, 225 of the 300 students attending scattered for home.

**Western Doctors Will Go To Paris.**—It is reported that more than four hundred physicians from Illinois, Iowa, and Missouri are arranging to sail from New York on the "City of Rome" June 30, 1899. Their main object is to attend the International Congress of medical men to be held in Paris during the exposition.

**State Sanatorium for Consumptives.**—The Committee on Sanitation of the New York State Board of Charities held a meeting at Rochester, December 2d, to outline a bill for the establishment of a sanatorium for consumptives in the Adirondacks. The committee will report in favor of the sanatorium, at the meeting of the State Board in New York on December 12th.

**Serum Treatment of the Plague.**—The serum of Yersin, obtained from the Paris Pasteur Institute, is being employed at Santos for the treatment of the plague. Thus far 800 grams have been used, but with little success. It is believed by the authorities that the serum is inefficacious because of its age, a factor that Koch has shown to be a very important one. Experiments with fresh serum at Oporto has given most satisfactory results.

**Testing a Cure for Leprosy.**—Experiments are to be made at Honolulu in the use of a Venezuelan shrub for the treatment of leprosy. The samples have been forwarded by Surgeon-General Wyman of the United States. The shrubs are growing at Honolulu under the care of Dr. Carmichael of the United States Marine Hospital Service, who has been asked by the department at Washington to make the experiments.

**Sale of Quinin in Batavia.**—A report from the United States Consul at Batavia, Java, under date of October 14th, relates the results of efforts to arrange for the sale, independently of the trust in Europe, of the quinin product of the Java cinchona-bark plantations. The first public auction will take place in Batavia about the end of January, or in February next. Some 7000 kilograms of sulphate of quinin will be sold. The Consul advises American firms to take advantage of this opportunity.

**Oysters and Hospital Drainage.**—Residents of Suffolk County have complained to the State Board of Health

that the Long Island State Hospital empties its drainage into the Nissequogue River which passes out over oyster and clam beds in the Sound. In the event of typhoid fever occurring in the hospital this drainage would undoubtedly contaminate the oysters. Dr. Baxter T. Smelzer, secretary of the State Board of Health, and State Engineer Bond have been sent to investigate.

**Professor Sanarelli on Yellow Fever Once More.**—The distinguished discoverer of the bacillus icteroides has sent us an answer to the recent criticism of his position as regards the specific pathogeneity of that bacillus for yellow fever which have appeared in the columns of the MEDICAL NEWS. His answer will be found to be a very good review of the present position of the subject with a very sharp and somewhat personal retort upon his critics. Surgeon-General Sternberg contributes a dignified response.

**Our "Strenuous" Governor.**—Governor Roosevelt, who has from time to time urged his fellow-citizens to lead a "strenuous" life, is putting his theories into practice. The spacious billiard-room of the Executive Mansion at Albany has been transformed into a gymnasium and a course in wrestling has been begun. At the first lesson it is said that the Governor, in ring costume, was so vigorous in his exercise that his instructor was in constant danger of being rendered *hors de combat*. At this rate a number of physical culture gentlemen will have to be provided for the season.

**A Pharmacist Punished for Substitution.**—In a bill for an injunction Fairchild Brothers & Foster of New York had charged Edward Otto, a Chicago druggist, with substituting a spurious and inferior preparation for "Fairchild's Essence of Pepsin" in several cases where the latter was expressly called for in physicians' prescriptions. The case was hotly contested and hundreds of pages of depositions were taken in New York and Chicago. Judge Kohlsaas's decree sustained the charges made. It perpetually enjoins Otto from ever repeating the offense and taxes him with the costs, amounting to about \$500. Judge Kohlsaas's decision will probably protect manufacturing chemists, physicians and the general public, all of whom have in the past suffered from these fraudulent practices of a certain class of druggists.

**Obituary.**—Dr. Sheffield Green died November 29th, at his home in Richberg, New York, aged eighty-seven years. He served as surgeon in the Civil War and during the Appomattox campaign he was acting surgeon of the One Hundred and Forty-seventh New York Infantry. —Dr. John Stamford Sayre, formerly Passed Assistant-Surgeon in the United States Navy, died at his home in Monticello, Missouri, on November 30th. He was a graduate of Princeton and of the Medical School of the University of Michigan. —Dr. Charles Edmund Jones, son of the late Dr. Erasmus Jones, died on December 1st. He studied medicine at the Albany Medical College after which he took a course in the Homeopathic Medical College in New York. He had been president and secre-

ary of the Albany County Medical Society and has been a member of several homeopathic organizations.

**Inoculation against the Plague in India.**—Lord Curzon, the Viceroy of India, at a recent meeting at Poona, expressed himself vigorously in favor of inoculation against the plague, and gave proof of his faith by submitting to the operation himself. Although the Viceroy is a layman, his opinion is nevertheless of interest. He observes that out of 100 plague seizures among uninoculated persons, the average number of deaths is about 70 to 80 per cent., while in a corresponding number of cases among inoculated persons the proportions are entirely reversed, and 70 to 80 per cent., if not more, are saved. He considers that such figures cannot fail to carry conviction and he does not see how, in the face of them, it is possible for anyone to doubt the value of the process. The majority of the most distinguished native medical practitioners in the country are already in its favor, and more and more converts are being made from the remainder each day.

**Sanitary Condition of Santos.**—In view of the extension of the plague at Santos it is of interest to know of the sanitary conditions there existing. The reports that can be relied upon describe the town as in a very filthy condition. By reason of there being an epidemic of yellow fever there some attempts have been made to clean up the sewerless streets, but thus far the attempts have been ineffectual. The dock commissioners report a very great increase in the number of dead rats. This from the known association of rats and the plague has caused some anxiety, which should call out active methods for the cleaning of the city. Disinfection of departing cargoes is not carried on nor is the property of emigrating persons subjected to any thorough disinfection. Though the health authorities are being stirred to activity, they do not possess the necessary corps of equipped sanitarians nor the apparatus.

**Sidelights on the Plague.**—The steady persistence of the plague at Oporto is still watched with some uneasiness. Two hundred and thirty-six cases in nearly twelve weeks is not an appalling epidemic, and the death-rate is barely 30 per cent., but the profession is both grieved and alarmed by the lamentable death of one of its own members, Dr. Pestala, the Director of the Bacteriological Institute at Lisbon, as a result of an infection contracted while investigating the plague at Oporto. Nearly sixty persons who were unfortunately inmates of the same house with the doctor had to be taken to the lazaretto, and the town was naturally a good deal alarmed, but fortunately no new cases have been reported in the four or five days since. As an ingenious amplification of Dr. Patrick Manson's campaign against the plague may be mentioned the procedure of the French sanitary authorities in Algiers, who, after carefully sealing all openings in the sewers and flushing all traps, proceeded to charge them with large quantities of sulphurous acid gas. In this way they succeeded in suffocating, in their inmost fortress and chief resort, the rats with which the town was infested. What a price, by the way, the Pied Piper



of Hamlin could command from plague-threatened municipalities, if he could only reappear in these days.

*Dr. William H. Welch to Be Honored by His Pupils.*—It is customary in Germany for the pupils of a great teacher to express their appreciation and gratitude by dedicating to him a volume of their contributions to learning. The pupils of Dr. William H. Welch of Baltimore have decided to give expression to their regard for him in a similar way and the publication of a volume to mark his twenty-fifth year as a teacher and investigator is now in progress. During the past twenty-five years some seventy-five persons have undertaken investigation under Dr. Welch's leadership and nearly half of these will contribute to the volume mentioned. The edition will necessarily be limited by the number of subscribers. An early announcement of the publication is made to give opportunity for subscription, so that the committee can decide upon the number of copies to be printed. The volume will be royal octavo in size, and will contain at least five hundred pages of printed matter. It will be illustrated with many lithographic plates and text figures. The price has been fixed at five dollars. The book will contain contributions to pathology and to correlated sciences agreeing in scope with that of the leading scientific journals. All communications and subscriptions should be addressed to Dr. F. P. Mall (Secretary of the Committee of Publication), Johns Hopkins University, Baltimore, Md.

*Health of Our Troops in the Philippines.*—When the Philippine War, now apparently drawing to a close, shall be ended not the least of its many unusual features will be the exceptionally low death-rate of the American Army, including in this view both the mortality on the field and the mortality from disease. If any Volunteer regiment afforded a good test of comparison it was the fighting 20th Kansas. With a roll of 46 officers and 1266 enlisted men, after months of the most active and courageous service, it recorded a loss of only 3 officers and 30 enlisted men killed or dying of wounds. Only 33 Kansans died of disease, the total death-rate being only 5 per cent. for the men and 6 per cent. for the officers, all of whom were exposed to the double danger of an enemy's bullets and a tropical climate. We all remember the dire predictions of a year ago as to the terrible ravages in store for our troops when they came under the burning skies of Luzon. They were to go down by the thousands and not even our best medical arrangements were counted on to do more than slightly mitigate the effect of the inevitable calamity impending. General Otis has had practically a city of 30,000 inhabitants under his command in the soldiers serving under him, yet if the same record of mortality were made in any American city of the same population there would be no alarm expressed nor would the place be avoided as being especially unhealthful.

—*Army and Navy Journal.*

*Notes on Santos.*—Santos is a small city, some three hundred miles south of Rio de Janeiro. The population of the city is made up largely of laborers dependent upon the coffee interests for their living, the better

merchants of the place residing in the city of Sao Paulo, the capital of the State, thirty miles inland. The importance of the place in the world's commerce may be appreciated from the fact that in 1891 the total shipping amount to 808,000 tons. The city is very flat and most of it is but a few feet above sea level. As a result it is surrounded by large areas of fresh-water swamps, because the heavy surf from the ocean throws up a dike of sand along the sea front, thus holding back the waters of the streams from the mountains, except in times of very heavy rains, when the large flows break through and for a time relieve the swamps of their surplus water. The town has a system of sewers, but they are laid on very flat grades and in some cases have no slope, the putrefying sewage filling long lines of mains and giving off offensive odors, as well as infecting the subsoil. The sewage is collected at a pumping station at the edge of the town and discharged into the harbor on the mud flats, a pretense of chemical treatment being made in some small settling basins. The works as administered are thoroughly insufficient, and it is evident that, in view of their imperfect construction and inadequate sizes, they will have to be reconstructed, especially as the point of discharge of the effluent is in a very unfavorable place, and as there is a good location for it a little further down stream. There are also a number of drains, with walls laid without mortar, leading under the business portions of the town, running under the buildings and almost impossible to trace. The filth in these is carried back and forth by the tides and their embouchures are into the harbor, through the walls upon which the vessels discharge their cargoes. In the central portion of the business district there is a depression of the grade of the street, thus forming a pocket in which the surface water collects during heavy rains on account of the stoppage of an untraceable drain, and the store proprietors in the region built masonry dams about three feet high across the doorways to prevent this flood entering the stores and ruining their stocks. The houses are built in the manner characteristic of the country, being generally one story in height, of masonry, and with no cellars or ventilation under the floors, with no windows in the interior rooms, and with the most primitive sanitary arrangements. The streets and yards of houses are often in a most filthy condition, and personal habits of cleanliness and decency are on every hand observed to be violated to a disgusting degree. On the sidewalks of the side streets, in the heart of the town, deposits of fecal matter are frequently observed, and the drains from the urinals, located often against the fronts of houses, commonly discharge their contents in the street gutters. An effort was made by the city authorities to mitigate the evil by disinfecting these places with chlorid of lime, but various distinctive odors on a hot moist day are in strong evidence all over the town. In view of the fact that plague has now invaded this unfortunate country, it is to be regretted that the sanitary conditions are so bad. Once more the customary salutation of the nightly parting of friends in business will be "good bye" instead of "good-night."—*Marine Hospital Report.*

**MEDICAL MATTERS IN NEW YORK.**

**YELLOW FEVER ON A TRANSPORT—HOSPITAL SERVICE IN QUEENS—IMPROVEMENTS AT ST. VINCENT'S HOSPITAL—SMALLPOX AT FORT SLOCUM—MATERNITY HOSPITAL WORK—THE CITY BUDGET.**

THE transport "Burnside," which arrived at Quarantine on November 28th from Havana, had one case of yellow fever aboard, a discharged soldier of the United States Hospital Corps. He was removed to Swinburne Island and the ship was held for disinfection.

There is much complaint in the Borough of Queens of the insufficient hospital and ambulance service. The Jamaica Hospital refuses to attend cases beyond a radius of two miles from the hospital, and will not attend to medical cases without a physician's certificate. The hospital receives from the city the munificent appropriation of \$1500 a year; this amount, however, it considers inadequate.

The fiftieth anniversary of the founding of St. Vincent's Hospital was celebrated on November 26th by the dedication of the new chapel by Archbishop Corrigan. This chapel is of French Renaissance design. All of the fittings and furnishings are gifts from friends of the hospital. A children's ward, for children of both sexes over two years' old, and a free dispensary have also been opened.

Two cases of smallpox were discovered at Fort Slocum on Daniel's Island near New Rochelle on November 27th. The patients are two soldiers who came from Birmingham, Ala., ten days before the above date. Dr. Peck of New Rochelle investigated the situation and considered that there was no danger for that city but a quarantine was established against Daniel's Island.

An outline of the work of the Society of the Lying-in Hospital during the last seven years is contained in the advanced sheets of the annual report. The recent enlargement of its equipment through the liberality of Mr. J. Pierpont Morgan is described. Property adjoining the hospital has been secured which makes available for the new structure a total space of 21,750 square feet. The new building is expected to be ready for use on January 1, 1901.

Controller Coler's recent investigation into the appropriation of municipal funds for charities is discussed in the report. The recommendation made by the Controller's investigating committee, that the further granting of public funds to charities in this city be discontinued, is condemned. Since 1896, \$12,000 has been received annually by the society from the city.

According to a decision rendered some time ago by Justice Pryor, ambulances taking people to hospitals have no absolute right of way, but must take their turn in the streets like other vehicles. In consequence, Commissioner Keller has notified drivers that they will make themselves personally responsible by getting into street accidents through hurry. It is hoped that this rule may curb somewhat the officiousness of the ambulance surgeons and drivers.

The budget of Greater New York for municipal government in 1900 will be about \$79,202,000—a net total de-

crease of about \$4,500,000. Instead of the appropriations for 1899, of \$1,941,215 for the Department of Public Charities and of \$1,784,847 for charitable institutions, those for 1900 are respectively, \$1,696,813 and \$2,857,084.

The Health Department submits the following report of contagious diseases for the week ending December 2, 1899: measles, 275 cases, and 11 deaths; diphtheria, 260 cases, and 41 deaths; laryngeal diphtheria (croup), 7 cases, and 13 deaths; scarlet fever, 149 cases, and 7 deaths; smallpox, 2 cases; chicken-pox, 21 cases; tuberculosis, 199 cases, and 134 deaths; typhoid fever, 53 cases, and 19 deaths; cerebrospinal meningitis, 3 deaths.

**MEDICAL MATTERS IN PHILADELPHIA.**

[From Our Special Correspondent.]

**PROPOSED NEW JEWISH HOSPITAL—GIFT OF \$250,000 TO THE UNIVERSITY OF PENNSYLVANIA—PRESBYTERIAN HOSPITAL IMPROVEMENTS—MEDICAL CLUB OF PHILADELPHIA—BEQUEST TO THE MUTUAL-AID ASSOCIATION—DEATHS AND INFECTIOUS DISEASES DURING THE CURRENT WEEK.**

PHILADELPHIA, December 2, 1899.

THE new Beth Israel Hospital, if, indeed, this institution ever arrives at the dignity of its charterhood, is passing just at present through a turbulent stage of its early infancy. This is due to certain manifestations of the traditional trilogy of envy, hatred, and malice evinced toward the new project by numerous groups of downtown Jewish doctors not included in its list of proposed medical officers. The projected hospital is the outcome of a movement recently instituted by the Jewish residents of the southern section of this city to establish a hospital downtown for the benefit of orthodox members of their faith; but, owing, it is said, to factional feelings arising among a large number of Jewish doctors who have been disappointed in seeking positions in the new institution, there is a probability that two, not one, new Jewish hospitals will be established in the near future. The Beth Israel Hospital had obtained a list of 500 pledged subscribers, assuring it an annual income of at least \$5000, and includes in its medical staff the names of some of the most prominent Jewish physicians practising in this city. Its rival, as yet unnamed and unendowed, is pursuing a hot chase in quest of funds and of backing, and purposes choosing its medical officers from those Jewish doctors disbarred from holding positions in the rival institution by a clause in the latter's proposed charter declaring that no resident or visiting physician shall be eligible for appointment unless he is a medical graduate of ten-year's experience. Meanwhile, the original Jewish Hospital, long established in the northern part of town, calmly continues its work, and, glancing at its record of an annual deficiency of \$5000 or \$6000, wonders where a valid excuse for the multiplication of similar institutions is found.

Provost Harrison has announced that a gift of \$250,000 has been made to the University of Pennsylvania for the establishment of a new Laboratory of Physics, the donor being a public-spirited Philadelphian who desires that for the present his name be withheld from the pub-

lic. For some time the authorities of the university have been engaged in studying similar laboratories in both this country and in Europe so that within a short time it is hoped that the plans for the new structure and all its detailed equipment will be prepared, making possible its early erection.

The James Hogg Memorial Home for Nurses of the Presbyterian Hospital was formally dedicated, with appropriate ceremonies, on the evening of November 28th. The new building is the gift of J. Renwick Hogg, and with its completion another fine structure has been added to the already notably well-equipped group of buildings owned by this institution. The new building is constructed of brick and stone, in the Renaissance style of architecture, being three stories in height, and having accommodations for 68 nurses. The Neurological Ward of the hospital, now nearing completion, will furnish accommodations for 28 patients; it will be under the special supervision of Drs. S. Weir Mitchell, John K. Mitchell and Guy Hinsdale.

The Medical Club of Philadelphia, which comprises among its members about 500 physicians of the regular school, is about to become an incorporated organization, and to acquire a property for club purposes, situated in a central neighborhood. The recently elected officers of the club are as follows: President, Dr. James M. Anders; Vice-Presidents, Drs. Charles W. Burr, and G. E. de Schweinitz; Secretary, Dr. Guy Hinsdale; Treasurer, Dr. John H. Locke. The Governors of the club are Drs. A. H. Hulshizer and Charles K. Mills.

The will of Dr. Albert Fricke, who died last week, bequeaths one-half of his residuary estate to the Mutual Aid Association of the Philadelphia County Medical Society. The estate is valued approximately at \$33,000.

The total number of deaths in this city for the current week was 410, or an increase of 34 over the number reported last week, and of 11 for the corresponding week last year. There were 142 new cases of diphtheria, with 31 deaths; 54 new cases of scarlet fever, with a single death; and 35 new cases of enteric fever, with 6 deaths.

## CORRESPONDENCE.

### SURGEON-GENERAL STERNBERG'S REPLY TO SANARELLI.

To the Editor of the MEDICAL NEWS.

SIR—Accept my thanks for the opportunity to read proof-sheets of Dr. Sanarelli's last article.

I gave some of my reasons in my article published in the MEDICAL NEWS of August 19, 1899, for maintaining a position of scientific conservatism as regards the etiological rôle of Sanarelli's bacillus. The paper which you are about to publish adds nothing to the experimental data previously recorded, and, as I said in my paper above referred to, "I have no time or inclination for controversial writing." I have been unable to make any personal investigations since I was appointed Surgeon-General of the Army in 1893, but have followed with deep interest the researches of other investigators, and when the evidence

is all in hope to arrive at an unbiased opinion with reference to this important question. For the present I see no good reason for changing the opinion expressed at the conclusion of my previous communication, *viz.*, that the etiological relation of Sanarelli's bacillus has not yet been established. But, as I said in conclusion, "If, however, the results reported by Drs. Reed and Carroll can be shown to be based upon erroneous observations, I shall be ready to revise my opinion. Truth is mighty, and no doubt in the end will prevail."

Dr. Sanarelli's supposition that Drs. Reed and Carroll have been "working with a bacillus which is not bacillus icteroides" is without foundation. The statement made by Reed and Carroll in their paper published in the MEDICAL NEWS of September 9, 1899, is entirely correct. This is as follows:

"In the first place, before proceeding to consider Sanarelli's criticisms of our work, we desire to state that the culture of bacillus icteroides with which we have made the majority of our observations, was obtained by Dr. Sternberg from Pasteur's laboratory. We are informed by Dr. Sternberg that the package containing this culture was opened by Professor Roux in his (Sternberg's) presence, and the culture handed to the latter. It was delivered to one of us by Dr. Sternberg on September 24, 1897, and bore the label of the Laboratory of Hygiene, University of Montevideo. We may remark that this culture was not in the shape of the ordinary stroke culture, but contained a number of well-isolated colonies, such as would be obtained by inoculating an agar slant with a small drop of the blood of an infected animal. Several of the colonies on this agar slant showed the peculiar appearance of growth which Sanarelli considers as characteristic of bacillus icteroides. It was from one of these so-called characteristic colonies that we made our first transfer. Subsequent transplantations have been made by us at intervals of about four weeks, and have always been labeled 'Bacillus Icteroides, Original.' We have thus transplanted this original culture on agar, without transmission through animals, for a period of nearly two years. Like our other stock cultures it has been kept in agar tubes provided with rubber caps, and always in a dark closet.

"In the second place, at the time we began our investigations (September, 1897), no culture of the hog-cholera bacillus was in our laboratory, nor did we procure a culture of this bacillus from the Bureau of Animal Industry until the following spring (May, 1898), about seven months after we had begun our work."

I expect soon to receive a full report of the researches made by Drs. Reed and Carroll at the Army Medical Museum, and also those made by Dr. Agramonte in the City of Havana during the past summer. At some future time, when the experimental evidence is all before us, I hope to make a critical review of the subject of yellow-fever etiology, and if I arrive at the conclusion that the question has been definitely settled I shall be greatly pleased, for I am deeply interested in the advancement of scientific medicine. But the progress of science, in the past, has often been retarded by premature announce-



ments of discoveries, and by confirmation of alleged discoveries by prejudiced or incompetent investigators. A spirit of scientific conservatism is, therefore, very desirable if one would judge for himself of the merits of a question which can only be decided upon experimental evidence.

Very truly yours,

GEORGE M. STERNBERG,

Surgeon-General, United States Army.

WASHINGTON, D. C., December 2, 1899.

#### OUR LONDON LETTER.

SANITARY DRAWBACKS AT LADYSMITH AS A CAMP-SITE—DYSENTERY DUE TO DUST—HOSPITAL SHIPS AND TRAINS—MILITARY SANATORIUM AT WYNBERG AMONG THE PINES—THE "MERCIFUL MAUSER" AGAIN—HOSPITAL SHIP OF AMERICAN LADIES ALMOST READY TO SAIL—ENTHUSIASTIC STUDENTS—OVATION TO MR. TREVES—DEATH FROM ANTHRAX IN A HAIR-CURLER—APPROACHING "BACK-DOWN" OF THE LEICESTER BOARD OF GUARDIANS—THE HUMANITY OF MEDICINE, AN AMBULANCE FOR THE BOER WOUNDED—ANOTHER DETERMINED MOVE FOR WELSH WATER. A ROYAL COMMISSION AS A "SHELF"—SEIZURE OF EGGS "FOR ELECTION PURPOSES."

LONDON, NOVEMBER 25, 1899.

THE reports from the seat of war as to the thoroughness and practical working of the medical arrangements continue to be most satisfactory, although there are vague rumors of a shortage in the medical corps of some of the last bodies of troops sent out. There appears to be comparatively little sickness among the troops, although now that the letters from the war correspondents of the various journals, which have not, like their telegrams, passed under the censor's rigorous eye, have had time to arrive, we learn what sanitary experts had suspected for some time, that the besieged Ladysmith is almost as undesirable from a sanitary point of view, as the eloquent silence of military experts upon the subject would indicate it is from a military standpoint. It lies in a flat valley, commanded for cannon or even rifle fire by high hills on all sides, which at the same time shut out the breeze. The water of the Klip River which flows past the camp and town, although at present abundant in quantity is of most unsatisfactory quality, so that the troops have been obliged to depend upon a supply from wells and reservoirs, which is even now being doled out to them by the pint. A good deal of typhoid and dysentery has occurred in the town and its garrison for the past two seasons, and although fortunately owing to the rigorous precautions indicated, no outbreak has as yet occurred among the troops, it will be seen that the conditions are far from ideal for a long siege. A curious and rather unexpected cause of dysentery is alleged to be the clouds of reddish dust which fill the air continually and work their way into every house and tent and utensil, and even all packages of foods other than tins, so that considerable amounts of it have to be eaten with every meal. Its mechanical effects alone are sufficient to produce an in-

tense gastro-intestinal irritation, and even, it is alleged, erosions of the mucous membrane leading to hemorrhage, thus reminding one of the classic administration of pounded glass or finely chopped bristles for the same purpose by Chinese poisoners. The place is also swarming with ants that cut through every wool or vegetable fabric which they can reach, even the canvas flaps of the tents. Indeed, the place seems to have been selected, as is now frankly admitted by military men, more with reference to its relation to the railway lines and the river valleys, as a convenient basis for the accumulation of supplies and reserve troops, than as an ideal camp or post calculated to stand a siege, and, as was painfully obvious in our late war in such matters, the medical department was left totally unconsulted. However, by rigorous precautions and restriction of the use of the river water the place ought to be kept clear from any serious epidemic for the few weeks, which at most now remain before it can be relieved.

On the other hand, the arrangements for the care of the wounded in places not invested appear to have been admirably carried out. Two large hospital ships are already actively at work meeting the trains at Durban and carrying the wounded and invalids down to Capetown, from which they are transferred to the new Hospital Sanatorium situated several thousand feet above the sea-level, up and around the pines, at Wynberg, which is said to be an ideal health-resort, and, indeed, a favorite sanatoria for consumptives. The last troop-ship sent out has accommodation in its hospital ward for no less than eighty patients, and will be promptly set to work in this capacity on its arrival at Durban.

Two special hospital-trains have been provided and officered, and a third is now in construction for the Red-Cross Society at Birmingham.

Upon the surgical side the reports continue most gratifying, both as to the character and complications of the wounds made by the Mauser bullet, and the effectiveness of the modern aseptic treatment, even in the field, which was so cheerily demonstrated in our late Cuban campaign. Less than five per cent. of the wounded in the battles of ten days to two weeks ago have died, and of course this covers far the most critical period in ninety-nine per cent. of gunshot wounds. The small amount of pain actually inflicted by these wounds is almost as remarkable as the comparative absence of shock and of subsequent hemorrhage. Case after case is reported where men have been seriously wounded with but little to attract their attention except a slight numbness in the part penetrated, and one in which a soldier was shot completely through the face, from one cheek to the other, just below the floor of the orbits, with scarcely any sensation of pain whatever, and no disability except the loss of the sense of smell and blocking up of the nostrils by blood-clots. The fatal wound of General Symons was due to a jagged fragment of a shell and not to a bullet.

The preparation of the hospital ship provided by the American women in London is still proceeding with gratifying rapidity. Nearly \$100,000 have already been subscribed, and prominent firms, not merely of chemists

but also of provision dealers, are vying with one another in the generosity of their offers of stocks of free supplies. A concert is to be held this week at the Claridge Hotel at which such well-known artists as Mr. De Wolf Hopper, Miss Edna May, and last but not least, Mr. Tod Sloan, will appear to contribute to the entertainment. The date of the sailing of the "Maine" has already been fixed for Saturday, November 25th.

One of the most exciting and enthusiastic scenes which has yet occurred in connection with the departures for the front was the farewell ovation accorded to Mr. Treves by the medical students of London, chiefly, of course, from his own hospital, the London, but also from University's, St. Mary's, and, it is reported, even from the dignified Bart's. Nearly 400 of them were present at the station, and the instant the hero of the hour appeared he was lifted shoulder high and carried in triumph by the cheering crowd to the door of the carriage reserved for him. The medical student, irrepressible and irresponsible creature as he is, in some respects, can usually be trusted to have his heart in the right place, and is fully capable of appreciating the serious sacrifice which it means to a man in the prime of his activity, like Mr. Treves, to volunteer in the service of his country for a campaign of such uncertain duration as the present, to say nothing of the risks and hardships of climate and of the field.

The death from that, now fortunately rare, disease in the human subject, anthrax is reported in London this week. The infection was from the usual trade source, although from a slightly different branch of the industry from that in which the contagion is commonly caught. The patient was a curler of horse-hair for the padding of furniture and filling of mattresses and so forth, while the disease most commonly occurs at a slightly earlier stage of the hair-handling process in those who are scraping the hides or handling the wool pulled from sheep skins, hence its original name, "wool-sorter's disease." The disease presented the usual furuncular appearance, and the patient curiously enough succumbed not to it directly but to the chloroform which was being administered in preparation for an excision operation at the London Hospital.

The world "do move" even in darkest Leicester. At last night's meeting of the Guardians, one of the lady members who has been most heroic and even hysterical in her announcement of "no surrender" to the enemy, notified her intention of introducing at the next meeting a motion to rescind the resolution refusing to appoint a vaccination officer. As the resolution was reaffirmed at its last discussion by a vote of only twenty-six to twenty-three, and two of these twenty-six are now confined to their homes by serious illness, it is quite possible that the next meeting of the Board will see the capitulation of the garrison in the last anti-vaccination outpost which is in open rebellion to the law. A policy of masterly inactivity and the wearing effect of time sometimes work wonders.

Few more beautiful illustrations of the humanizing and, in the highest sense, civilizing influence and possi-

bilities of medicine have been given than the equipment, just completed, of a special ambulance to be sent to Pretoria for the care of the Boer wounded. The cost of this has been chiefly defrayed by an English citizen and late prominent government official at the Cape, Sir James Sivewright, and it is officered entirely by British subjects, many of whom, as would naturally be expected, are inhabitants of Cape Colony and of Dutch descent. There is practically no other department of human needs in which such a beautiful recognition of the higher sympathies and interests of humanity could have been accorded, and the memory of episodes of this description will do more to heal the wounds of war, after the struggle is over, than almost anything else that could well be devised.

The London County Council has again vindicated its title to be regarded as a courageous and trustworthy champion of the sanitary rights and safety of the people under its control by reintroducing its bill for the buying out of the present water companies and securing a permanent supply in the near future from the Welsh mountains at its late meeting. It is evidently not discouraged by the effect of the calm shelving of its bill for this purpose by the Government at the last session, and proposes to fight the matter out along this line until the disgraceful paresis which seems to have fallen upon the activities of Parliament, in this respect, is galvanized into a return of vitality. Never were the advantages of a Royal Commission as a factor in the great scheme of "How not to do it" better displayed. A commission was appointed more than two years ago, has held innumerable meetings and announced its readiness to report, but rested apparently absolutely content with that. And the Government has a perfectly effective bar to any proposed reforms in the water-supply in the answer that nothing can be done until after the report of the comatose commission.

The activity of the modern Medical Officer of Health appears to have no limits. Not content with insisting upon the rigid supervision of meat, milk, fruits, and vegetables, the energetic sanitary officer of Mile End in East London, Dr. Taylor, has invaded the hitherto sacred mystery of the "store egg." Hitherto the superannuated egg has been regarded with a singular apathy, from a sanitary point of view, and its chief usefulness appears to have been as an unailing fund of material for the humorist. But Dr. Taylor proposes to take the joke seriously and has actually pounced upon and condemned at one fell swoop no less than 4000 of these interesting remains. Of course the humorist will get his turn out of even this, and it is already wickedly suggested by some daily papers that the eggs were merely being held in stock for election purposes, especially as a very active contest is imminent in a neighboring borough. It really is somewhat singular that so little has been done toward the inspection of the state of our egg-supply, probably however chiefly for the reason that everyone is supposed to understand the risk he runs in buying suspiciously cheap eggs, and that the changes are so offensive when present that there is little risk of their being used as a direct food

supply when really unfit. If, however, anyone will take the trouble to investigate half a dozen samples of cheap pastry or cakes, with the best sanitary inspector yet invented, his own nose, he will find abundant evidence that this does not interfere with their use for cooking purposes, and the action of Dr. Taylor must be most cordially commended.

## SOCIETY PROCEEDINGS.

### NINTH ANNUAL MEETING OF THE NEW YORK STATE ASSOCIATION OF RAILWAY SURGEONS.

*Held at the Academy of Medicine, New York City, November 16th, 1899.*

THE President's address was delivered by DR. THEODORE D. MILLS of Middletown and was entitled

#### THE RAILWAY SURGEON AND HIS RELATIONS TO THE RAILROADS.

Every year the number of railroads who do not employ their own corps of surgeons is growing less. This is as it should be. The railroads owe it to their patrons to give them the best possible service in case of accident. Such service cannot be obtained from the chance medical men that railroad employees may be able to find in the excitement immediately following an accident. Besides there is a sense of responsibility in the railroad surgeon himself, which makes him hurry at once on a call and familiarity with series of railroad cases gives him a skill in treating them. His arrangements are all made for just such emergencies and in every way the best interests of the company and its patrons are consulted.

It is the custom to say that corporations have no souls, but certainly the railroad corporations of to-day are not open to the charge of inhumanity. Those familiar with them know that not infrequently employees who have been in their service for a long period but who have become incapacitated for work because of ailments which bear no relation to their railroad employment, however, are taken care of when they can no longer be of service. A better feeling towards railroad companies is coming up in the popular mind, and the old idea that a company should be mulcted in damages to as large an extent as possible is no longer as popular as it was. Lawyers and, unfortunately, doctors who are a disgrace to their profession still join the forces to defraud companies by damage suits in which such important affections as nervous shock or spinal concussion play a large rôle. But there is no doubt that righteous sentiment in this matter in both professions and in the public mind is lessening the evil. Railroad surgeons can do a great deal to help on the good feeling which is leading to the eradication of this evil. Their testimony in such cases should be absolutely unbiased and should favor neither the company nor the patient. Every detail at the time of the accident being carefully noted so that a proper account of the case may be given.

Railroading itself has become less dangerous in late years. A few years ago it was a rare thing to find a

brakeman of much experience with his hand uninjured. The patent coupler has done away with most of this. Other mechanical improvements have been equally beneficial. While the field for the employment of the railroad surgeon is becoming more limited, there is another important subject which progress in medical science has opened up for him. We realize now much better than we did how important is prophylaxis in the matter of contagious diseases. Railroad cars are very liable to be bearers of infections. The cars that run on the lines to our mountains carry a large number of tuberculous patients. Needless to say the germs of disease may be readily spread in this way. This new field for the railroad surgeon of disinfection and sanitation of cars and waiting-rooms is an important one. It is our duty to see that it is not neglected.

DR. B. FARQUHAR CURTIS of New York then read a paper, entitled

#### DISLOCATION OF THE SHOULDER WITH FRACTURE OF THE NECK OF THE HUMERUS. THREE CASES TREATED BY OPERATION.

Fracture of the neck of the humerus with dislocation of the upper fragment is a rare injury and yet it has been recognized by surgeons since before the Christian era. McBurney and Dowd collected 96 cases, in 69 of which the fracture was at the surgical neck, and 27 at the anatomical neck of the humerus. In my three cases the fracture was once at the surgical neck, once at the anatomical neck and in one a comminuted fracture, the bone being split through the tuberosity. Usually the head is dislocated into the axilla, but at least two cases have been recorded where it was found under the spine of the scapula. Up to recent years, the dislocated part has usually been left unreduced. A better result was often attained in this way than after simple dislocation. In many cases, however, the result was very unsatisfactory. At times there was necrosis of the dislocated fragment; at times the pressure exerted by it on vessels caused gangrene, while the pressure on nerves caused intense pain, growing discomfort and trophic disturbances in the arm.

Some method of treatment other than that of letting things alone was needed. The old method permitted union of the bone to take place and then the reduction of the dislocation was attempted. There are in literature altogether three doubtful successes out of ten cases. Another method was to reduce at once by traction and pressure of the fingers and then set the bone so as to permit healing of the fracture. Stimson, who advises this method, recommends gentle traction so as not to tear the periosteal strands that may still connect the two parts of the fractured bone. Needless to say, traction with the heel in the axilla should not be employed in these cases. Where gentle pressure will not accomplish the purpose of reducing the dislocation no undue violence should be used. In 80 cases treated by this method, 36 successes were reported. In many of them a new joint, a pseudo-arthritis developed. Sir James Y. Simpson recommended the beginning of passive motion as soon as possible after the accident, in order to lead to the formation of such a pseudo-arthritis. It gives a reasonably good functional



result. The method is especially of service in cases where the bone has been broken in an attempt to reduce an old dislocation.

The third method of treating these cases is by resection and removal of the upper fragment. Curtis performed this operation in one of his cases, a young man of twenty-nine who, in a fit, fell from a wagon and was brought to Bellevue Hospital. A bony mass was found in the coracoid region. There was no deltoid flattening, some little shortening and the elbow could be brought to the side. The Roentgen-rays showed the glenoid cavity empty and seemed to show a fracture with the head of the bone displaced. The joint was cut down upon comminuted fragments of the head together with a portion of the greater tuberosity removed so as to avoid too great callous building. The result was excellent. As may be seen, the patient even when his scapula is firmly held to the chest on the side can raise his arm to the vertical position. Internal rotation is good while external rotation is lost. As teamster, he himself is of the opinion that he is able to use his arm quite as well as before.

The fourth method of treating these cases is by open arthrotomy. Until seven years ago this method was not mentioned. An American surgeon, Stevens of Ft. Wayne, was the first to perform the operation. Porter of Boston did it afterwards, and then McBurney of New York invented the hook for rotation and traction so as to get the bone into place. In one of the two cases in which Curtis did an open arthrotomy he wired the ends of the bone together and then reduced the dislocation. Four weeks after the operation there was very little movement and practically no power of rotation. Now, as may be seen here, the arm is nearly as good as ever. The result in a resection may be practically as good, but it is not as ideal an operation as the open one. Of all the operations of this kind that have been done there has been about ten per cent. of mortality. This, of course, is recognized as a high mortality, and would of itself be enough to deter surgeons from doing the operation. A consideration of the fatal cases, however, shows that in practically all of them other causes besides the operation itself were either directly responsible for the death or at least were active factors in bringing it about.

The rule in these cases is if the fracture and dislocation can not both be reduced satisfactorily to operate at once. It does not add to the danger, while the operation is easier. After the operation movement is begun without delay. Such voluntary movement as can take place beneath the shoulder-cap dressing are permitted in from ten to fourteen days after operation. After a fracture of the anatomical neck passive motion is begun three weeks after the operation; after fracture of the surgical neck five weeks may elapse.

In discussion DR. MANLEY of New York said that he had never seen fracture of the anatomical neck or the lesion described by Dr. Curtis except after efforts at reduction of a dislocation. He asked if any such efforts had been made in this case. As to the operation in general, our methods of bringing about reduction after dis-

location are as yet so imperfect and may be interfered with so much by spasm of the tissues after the injury that we can not be sure when a dislocation is really irreducible. All have seen cases where the dislocation absolutely resisted all efforts one day, yet yielded readily the next. Spontaneous reduction after long unsuccessful efforts was not unknown. Ten-per-cent. mortality is high, and this has occurred in the best hands and in hospitals where the circumstances are most favorable for success. It is probable, then, that this method of treatment will not become popular with the profession, especially as the functional results even when the dislocation remains unreduced, are in many cases not at all unsatisfactory.

DR. BURNS of Long Island City said that ten-per-cent. mortality is certainly high for the operation. It would assuredly be higher in general practice. Its recommendation then seems inadvisable. With careful treatment excellent functional results can be obtained without the danger involved in the operation.

DR. CURTIS said, in concluding the discussion, that the case in which he had done resection had been one in which the comminution of the head of the bone had rendered it advisable in order to avoid excessive callous formation and consequent ankylosis. As to the loss of the function of the external rotators he was unable to explain it. No efforts had been made in any of the cases at reduction, so that the fracture was not due to this cause. He thinks ten-per-cent. mortality serious, but even with this the operation is much less serious than is usually said in the text-books, and its prognosis is continually improving with the improvements in surgical technic. There is no doubt that with care the mortality can be reduced so that it will not exceed that for suture after fractures of the patella.

DR. ROBERT T. MORRIS of New York then read a paper entitled

#### WHERE HYDROGEN DIOXID IS HARMFUL.

DR. MORRIS said: There are three classes of cases in which hydrogen dioxid may easily do harm, and it is well to consider the reasons therefore, as they will help to give the indications for the use of hydrogen dioxid in general. These cases are the ones in which the drug often does good when used judiciously, but harm when used to excess. They are, first, compound fracture that has become infected; second, diphtheria, and, third, appendicitis. In all of these cases the hydrogen dioxid may do harm if used injudiciously. In compound fracture where pus burrows the hydrogen dioxid will follow it as far as it goes. But if it is used every day it produces mechanical distension of the sinuses, it destroys the pus, but it also destroys the new plastic lymphatic tissue which is being made ready for the formation of connective tissue, and thus keeps the fistula open for a long time. If after awhile some stimulant preparation, such as a weak solution of the silver salts or balsam of Peru, were used they would bring about closure of the sinuses. It saves life at first by averting septic crises, but what is a virtue at one stage becomes vicious later, and it delays convalescence.

In diphtheria it undoubtedly removes the patch of co-

agulated necrotic tissue in the midst of which microbes are growing and producing the toxins that cause the constitutional symptoms of the disease, but it also injures the cells of the mucous membrane. After the application of hydrogen dioxid for several days the superficial epithelium becomes less resistant, the infection spreads, and the false membrane is found all over the throat.

In appendicitis the use of hydrogen dioxid at the beginning when the abscess is first opened, enables the surgeon to get rid very effectually of toxin-bearing fluids. But, as in the compound fracture, it hinders repair by destroying the new plastic lymph and keeps the fistula open for a long time. Very often in these cases of persistent fistula where hydrogen dioxid has been used right along the only treatment that is needed to bring about closure of the fistula is to put on a pad and leave the patient alone.

DR. BELL said that the use of hydrogen dioxid in diphtheria carried with it certain dangers, which it was well to bear in mind. In one case recently he had seen a fatal result after the use of peroxid, though tracheotomy was done immediately when symptoms of suffocation ensued. At the autopsy it was found that almost a complete cast of the larynx had been loosened by the hydrogen dioxid and then aspirated beyond the bifurcation of the trachea, where it caused suffocation. In another case a large patch of false membrane was loosened in the same manner, and while it did not cause a fatal issue it was aspirated into the trachea and only gotten rid of after a severe attack of suffocation and coughing.

DR. STILLING of Concord said that a warm solution of formalin one-half per cent. has in his hands proved the best antiseptic for use in the cases in which hydrogen dioxid was formerly much recommended, but it is now being generally abandoned. It has practically none of the disadvantages of the peroxid, does not destroy the granulation tissue, nor keep sinuses open, and yet has all the antiseptic effect of the former drug.

In concluding the discussion, DR. MORRIS said that his experience had taught him to use hydrogen dioxid for the first dressing of a wound and afterwards as a routine practice to employ other antiseptics. If there was no septic reaction the other antiseptics were continued. If there were fever, rapid pulse, and some constitutional symptoms indicating absorption of septic material, then hydrogen peroxid was used a second or even a third time. With reference to fistulæ, some of them remain open for a month despite any treatment that may be used. Some for several months. In one recent case the fistula remained open for two years, the whole cecum sloughing out. When fistulæ will close and when they should be treated by letting alone rather than by active intervention only wide experience will help the surgeon to determine.

As to formaldehyd, while it is undoubtedly an excellent antiseptic, there are certain features in its use which do not promise as well as the employment of hydrogen dioxid. Thick masses of infected lymphatic tissue, for instance, will not be penetrated by the formaldehyd. Necrotic tissue also resists its antiseptic effect. Blood coagula are not dissolved and infective agents may germi-

nate in the midst of them. The hydrogen dioxid forces its way because of the boiling action incident to the setting free of gases when in contact with albuminous substances and so penetrates every part where there is pus. The mere mechanical washing out with formaldehyd will never accomplish this.

The next paper was read by DR. H. JOHN L. EDDY, and was entitled

#### EMERGENT SURGERY.

DR. EDDY dwelt on the necessity for being able to make use of whatever means might be at hand in emergencies in order to make surgical measures as nearly aseptic as possible. The engine will supply hot water for this purpose, and one must learn to pick out the most intelligent among the bystanders as an assistant. Care is very important at the first dressing, because on it to a great extent will depend the aftercourse of the case. If the first dressing be carefully applied, there would be no need to open amputation wounds or other aseptic operation sites before eight or nine days have passed. It is important in these operations done at the place of the accident to pull down the nerves and cut them off some distance above the line of amputation in order to avoid their subsequent entanglement in the scar.

DR. BURNS of Long Island City said in discussion: Much can be done now in the way of carrying aseptic dressings and aseptic instruments with one. Towels and gauze and suture material thoroughly sterilized and wrapped in wax paper can be easily obtained and carried without occupying much space. Compressed sponges are an important addition to the railway surgeon's armamentarium. Pledgets of cotton are liable to be infected, or cannot easily be rendered aseptic. These compressed sponges take their place very well. Sterilizers are made so small now that they can be carried with one, and an alcohol lamp completes the outfit. Thus the sterilization of instruments may be accomplished absolutely independent of circumstances.

DR. MORRIS said that for emergency cases he found asbestos wool an excellent dressing. It can be easily rendered absolutely aseptic by burning it. Where operations are done at a distance from all surgical conveniences this asbestos wool may be taken out every day and heated on a shovel so as to become absolutely aseptic and then replaced.

DR. MANLEY of New York then presented

#### SOME INTERESTING CASES INVOLVING BONE LESIONS.

The first was a case involving a fracture of the upper fourth of the ulna with a dislocation of the head of the radius. The muscles of the hand wasted after the accident, motion was very much restricted, and there was absolutely no supination. The hand was cold, perspiration was profuse, vitality of the skin was greatly lowered. The location of the lesions pointed to an involvement of the median nerve. Several surgeons have discouraged operative interference. An incision showed that the bones were welded together by solidified calculus in the upper part. This was split up, the head of the radius was found to be pressing on the median

nerve and was sawed off. The functional result is, as may be seen, excellent.

In a second patient, a freight conductor, a car passed over the upper part of his arm. There was a fracture in the upper third of the radius and ulna, a fracture of the lower fourth of the humerus, a fracture in the upper third of the humerus. My rule is never to amputate, by primary operation, no matter how unpromising the case looks. This man's arm has been saved to him by this rule, and will undoubtedly be of a good deal more use than any prosthetic apparatus would be.

In another patient, also a freight conductor, the accident happened exactly as did the previous one, by tripping over one of the switch conduit boxes in the yards. It was his foot instead of the arm that was run over. A typical amputation by one of the classical methods was not attempted, but all the tissue possible was saved. The result, you see, is a good, serviceable stump. These cases all plead for more conservative work in emergency surgery.

REPORT OF MEETING OF THE LABORATORY COMMITTEE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

*Held in the Laboratory of the Medical Sciences of the University of Minnesota, Minneapolis, Minn., October 30, 1899.*

PROFESSOR W. H. WELCH of Johns Hopkins University, the Honorary Chairman, opened the meeting with an address in which he called attention to the benefit to be derived from the meeting of the laboratory workers at the Association. He then spoke of certain lines of work that he deemed worthy of the committee's consideration.

He suggested the value of further investigations with reference to the danger that really results from infection from tubercular cattle, and to ascertain amid varying exaggerated and underestimated reports the exact degree of danger. Concerning typhoid fever, he deplored the experiences during the recent war, the mistakes in diagnoses, and the absence of application of hygienic principles, pointing out the necessity of better methods of diagnosis of typhoid and malarial diseases, and of the teaching of hygiene in the medical schools. He mentioned the fact that the problem of disinfection is a subject of constant interest, and that it remains to be proved whether in certain diseases it is necessary to disinfect at all.

He touched upon the question of sewage disposal by natural methods, and then indicated the broad biological subject of the differentiation of bacteriological species.

STUDIES UPON THE DISTRIBUTION OF CERTAIN VARIETIES OF DIPHTHERIA BACILLUS.

These papers were presented by DRs. WESTBROOK, WILSON, and McDANIEL of Minneapolis. Out of 263 children in health that were examined, twenty-five per

cent. showed no diphtheria-like organisms in either nose or throat, while seventy-five per cent. showed the nose and throat infected. In classifying diphtheria bacilli they fall into three groups depending upon microscopical appearances. Group 1, includes typical diphtheria bacilli; group 2, even staining and irregular bacilli; group 3, short, even bacilli. The bacteria of group 2 were more frequently found than those of group 1. Infection of the nose was found to occur more frequently than infection of the throat, in the proportion of ninety-four per cent. and sixty-one per cent. respectively. The bacteria of group 1 were more frequently found in the throats, and those of group 2 in the noses. Another examination of 50 to 100 synchronous throat and nose cultures gave somewhat surprising results in the large percentage of typical granular and irregular diphtheria bacilli found, while even staining varieties were more numerous.

The methods of recording the morphological characteristics of diphtheria-like micro-organisms studied were as follows: The making of synchronous nose and throat cultures of healthy children living under similar conditions in several State institutions, and of healthy children in a town where diphtheria was never absent, and of the public-school children in three towns of the State.

In all of these cases there was a percentage of typical granular bacillus diphtheria, particularly in the nose. Types resembling the atypical form were met with much more frequently. In comparing the results of examinations from various sources the following points were noted: Each individual type was found to persist in a given pure culture throughout several generations, and to be present in all stages; the tendency of each type to develop a few individuals of one or several of the other types was marked; changes from non-granular forms of the same size and conversely were, perhaps, not more frequent than changes in form and size with preservation of the original characteristic staining reactions.

A STREPTOTHRIX FORM ISOLATED FROM WATER RESEMBLING DIPHTHERIA BACILLUS

was presented by DR. J. J. MCKENZIE of the Board of Health of Toronto. In the course of the examination of a sample of water there appeared in the plates small colonies with fringed margins, which proved to be a streptothrix. Its growth, which was followed on all the ordinary media, was at first slow, but after several transfers it became more luxuriant, especially at 37° C. On glycerin-agar and blood-serum the growth had many of the streptothrix characters. In bouillon and on potato it did not grow well. It did not ferment lactose or glucose. Its growth on potato was not luxuriant, and it showed a tendency on the latter to break into shorter segments until it was almost coccus-like. It proved to be but slightly pathogenic for guinea-pigs.

BRANCHING DIPHTHERIA BACILLI

were described by DR. HIBBERT HILL of Boston. The indefinite "ray fungus" of actinomycosis, after various vicissitudes, became classified as a definitely branched form, a streptothrix. The similarity in many respects of the bacillus tuberculosis to the ray fungus has obtained



for the latter recognition as a branched organism, it being in all probability also a streptothrix. Already a common percentage for both organisms is suspected. The organism for leprosy and the organism of glanders also sometimes show branching. The occasional branching of the diphtheria bacillus has been recognized for years. Described at first as a peculiarity, explained as a result of degeneration, it is now beginning to be recognized as a definite characteristic. The organism of diphtheria seems likely before long to be removed from the class bacillus, and placed in the class streptothrix, as a degenerate form of this genus. The fact that branching occurs at times, in fifteen-hour cultures, as well as in much older cultures, is already established. It may occur on nutrient agar as well as on Loeffler serum. An important point is to determine the frequency of its occurrence.

The papers treating of diphtheria organism were spiritedly discussed both from the standpoint of the practising physician and the bacteriologist by DRs. WELCH, WESSBROOK, HILL, RAVOLD, and FIELD.

#### THE SIGNIFICANCE OF CERTAIN GAS-PRODUCING BACTERIA OF NON-COLON TYPE IN SANITARY ANALYSIS

was the subject of papers prepared by H. L. RUSSELL, and V. N. BASSETT, of Madison. Among other things they said that to insure the elimination of other species that can be cultivated at blood heat, it is better to isolate in pure culture the gas-forming species. The method employed is to make a litmus-lactose agar culture of a sample of water, and if acid colonies develop, transfer these to glucose fermentation-tubes. The separation does not usually require more than thirty-six hours and from the separated colony on the litmus agar glucose free broth is inoculated for the indol test, cultures in glucose and lactose, bouillon, litmus-milk and gelatin slabs are made. These five subcultures will permit of a differentiation in about two to three days more.

Of leading importance in this differentiation is the character of the fermentation in different sugars. Where gas is produced, it is a mixture of CO, and an explosible residue that is generally H. The relation of these gases to each other in many species of aerogenic bacteria is fairly constant. Theobald Smith has designated this relation of H/CO as the gas-formula. The characteristic relation for the colon type of organism has been shown by him as well as others to be H/CO-2/1. The classification on the basis of their gas formula of many of the aerogenic forms found in water supplies shows at once two well differentiated groups. Those having a formula of 2/1 as presented by the colon bacillus, and those having an inverted formula of 1/2. These two classes are often represented, the first one in those waters that are polluted with fecal discharges; the second in open waters in which the possibility of sewage pollution is not absolutely prevented, but in which the more probable origin of the gas-forming organism is from upper soil layers or decomposing vegetable or animal matter. Transitional types are also more or less frequent. Sometimes the gas-formula exceeds 2/1; then, again, the

amount of hydrogen equals the CO, making the formula 1/1.

A continued study of gas-forming bacteria from water leads us to believe that some types of these groups are subject to considerable variation when cultivated on artificial media for a length of time. In our experience this tendency to variation has expressed itself mainly in the fermentations function, more especially as to the amount of gas produced, although considerable change in gas formula has also been noted. This has been more apparent in the 1/2 and the transitional or 1/1 type than it has in the distinctly colon class. The 1/2 group seems to be the most variable in its gas relationship, the 1/1 group varying in time, but more slowly.

While an inspection of the gas formula of those types in which the H is equal to or less than CO at once serves to differentiate them from the colon type, those species possessing the formula 2/1 or thereabouts cannot safely be classed as colon on this basis alone. In this case the other cultures aid in determining colon affinities. The determination of the gas formula is of prime importance in determining the relation of any aerogenic organism. While it cannot settle the question positively whether an organism is colon-like or not, the presence of an aberrant colon formula as 1/1, or more especially 1/2, signifies the non-colon relation of the bacterium.

#### NOTES ON BACTERIAL WATER ANALYSIS

by E. O. JORDAN and E. E. IRONS of Chicago included a discussion of the question of transportation. It seems to be assumed by some that a sample packed in ice will arrive at its destination in substantially the same condition as when it was drawn from the source. There are however conditions in which these assumptions prove strikingly unwarranted.

In one instance three samples of polluted river water of a temperature of about 28° C., were plated immediately after collection and gave respectively 535,000, 412,000, and 329,000 colonies. The bottles were at once packed in ice and shipped to Chicago. They did not arrive until forty-eight hours had elapsed; the temperature of the water case was 21° C., and the numbers obtained by plating—namely, 54,500, 50,500, and 73,500—were much lower than the initial numbers. There is no escape from the conclusion, therefore, that in some cases packing in ice is followed by a rapid and marked decline in the number of colonies. It sometimes occurs that instead of a decline in numbers in water samples packed in ice, a considerable increase may be observed.

The initial temperature determines to a large extent the course of events. In the warmer seasons of the year, the vitiation of numerical results by transportation probably reaches its maximum, whether the water sample be shipped without any attempt to modify its temperature, or whether it be packed in ice. The influence of ice-packing upon such colon bacilli as may be present in polluted water does not appear to be injurious.

In regard to dilution it is found that results obtained by plating 1/10 c.c., for example, will be found to

agree less closely with one another than those obtained from 2/1-10 dilution with sterile water; but if there are more than about 100 colonies to the plate, there may be difficulty arising from the suppression or obscuration of colonies.

Not only is the exact reaction of media important, but variations in the compositions of the peptones used have been shown to be of great significance. Quite recently a paper by HESSE and NIEDNER (*Zeitschr. f. Hyg.*, xxix, p. 454) has appeared in which a substance composed largely of albumose and known by the trade name of Nahrstoff Heyden, is recommended as a bacterial nutrient. We have recently procured some Nahrstoff Heyden, and have obtained with it numerical results much higher than those secured with the ordinary nutrient media.

#### SOME POINTS ON THE DIFFERENTIATION AND CLASSIFICATION OF WATER BACTERIA

were present by GEORGE W. FULLER and GEORGE A. JOHNSON of New York.

This subject involved the consideration of the following points: Vitality of the organism at time of cultivation for classification data; composition and preparation of culture media; temperature of cultivation; period of cultivation. With the view to eliminate in a measure, if possible, the effect of debilitation of the bacterial cells, which may exist prior to their isolation from water, the pure culture is subjected to a preliminary cultivation. It is then transplanted to nutrient broth; from the latter, after three days' development at 20° C. to gelatin plates; thence, after the same period and temperature of cultivation, back to an agar-tube; and finally after the agar-tube has developed for three days at 20° C. the conventional media are seeded.

A chart of bacteria in the Ohio River water at Cincinnati represented tests which gave clearly defined results capable of expression by the plus or minus sign. The second feature of the chart was the arrangement of species of bacteria into thirteen groups: (1) Fluorescent forms; (2) red chromogenic forms; (3) orange chromogenic forms; (4) yellow chromogenic forms; (5) violet chromogenic forms; (6) non-fluorescent, non-chromogenic, gelatin liquefying bacteria, forming proteus-like colonies on gelatin; (7) non-fluorescent, non-chromogenic, gelatin liquefying bacteria, forming subtilis-like colonies on gelatin; (8) non-fluorescent, non-chromogenic, non-proteus, and non-subtilis-like bacteria, which liquefy gelatin and ferment carbohydrate with the production of gas; (9) bacteria conforming to 8, except that fermentation of carbohydrate takes place without the formation of gas; (10) bacteria conforming to 8, except that no fermentation of carbohydrate occurs; (11) non-fluorescent, non-chromogenic, non-gelatin-liquefying bacteria, which ferment carbohydrates with the production of gas; (12) bacteria conforming to the specified characteristics of Group 11, except that fermentation of carbohydrate takes place without the production of gas; (13) all bacteria conforming to 11, except that no fermentation of carbohydrate occurs. The

colors embraced in the four chromogenic groups may be described as red, color produced by bacillus prodigiosus on agar; yellow, color produced by the growth of sarcina lutea on agar, with the dividing line between this and the orange group at the yellow-ochre has produced bacillus ocraceus on agar; orange, this color begins just below the yellow-ochre stage. The true orange is the same as that produced by bacillus aurantiacus on agar; violet, the same as that color produced by the growth of bacillus violaceus on agar.

#### THE QUESTION OF STANDARD METHODS FOR THE DETERMINATION OF THE NUMBERS OF BACTERIA IN WATERS

was discussed, and attention called to the advisability of universally adopting a system in connection with the composition of culture media; reaction of the media; dilution of sample of water, if such be made, and the period and temperature of development.

With a view to obtaining as complete development of water bacteria, and in a shorter time than is now the case, the most promising results have been obtained by the use of a simple medium, consisting of ordinary meat infusion, with twelve per cent. by weight of gelatin, but with the precaution that the medium shall not be overheated.

In repeated instances at Louisville and Cincinnati this medium yielded results in two-days' development at 20° C., which are at least fifty per cent. higher than those obtained from the regular nutrient gelatin after a period of three-days' development at the same temperature.

#### THE OBSERVATION OF ODOR AS AN ESSENTIAL PART OF WATER ANALYSIS,

was spoken of by DR. GEORGE C. WHIPPLE of Brooklyn, N. Y.

The "cold odor" is observed by shaking the sample in a partly-filled 2-liter bottle. The "hot odor" is observed by heating 200 c.c. of the sample in a beaker covered with a watch-glass to a point just short of boiling, and making the observation as soon as the water has cooled sufficiently.

The following scale of terms for estimating the intensity will be found convenient: 0. None. No odor. 1, Very faint. An odor that would be scarcely perceptible to the consumer, but one that could be detected in the laboratory. 2, Faint. An odor that might be detected by the consumer. 3, Distinct. An odor sure to be detected by the consumer, and one that would make the water looked upon with disfavor. 4, Decided. An odor that would force itself upon the attention, making the water almost unpalatable. 5, Very strong. A term reserved for extreme cases where the odor is very intense. By using this numerical scale in connection with abbreviations of the adjectives denoting the quality of the odors the descriptions may be completely recorded, and made to form a part of the analysis. Thus, 2v would mean that the water had a vegetable odor that might be detected by the consumer; 3f, that the water had a fishy odor sure to cause remark by the consumer, etc. The following are some of the common adjectives likely to be

used. Each may be abbreviated by a single letter: V, vegetable; e, earthy; p, peaty; a, aromatic; g, grassy; f, fishy; m, moldy; u, unpleasant; d, disagreeable.

After a thorough discussion of this subject Dr. SWARTS of Providence moved that a committee be appointed to present at the next meeting a standard formula for the analysis of water which should be the recommended method of analysis of this Association.

DR. WELCH, the Chairman, announced the following names for that committee: Mr. George W. Fuller, Professor H. L. Russell, Professor E. O. Jordan, Dr. Adolph Gehrmann, Dr. Wyatt Johnston, Mr. G. C. Whipple, and Mr. H. W. Clark.

#### THE IDOMETRIC DETERMINATION OF SMALL QUANTITIES OF CARBON MONOXID,

by DRS. LEONARD P. KINNICUTT and GEORGE R. SANFORD.

The method of determining carbon monoxid by oxidation to carbon dioxid has not, until the past ten years, received much attention. This oxidation can be accomplished by the use of many oxidizing agents, but of all those that have been proposed iodine penta-oxid is, from our experience, the one that can best be used for the determination of small amounts of carbon monoxid.

The apparatus used was, with slight changes, that described by Nicloux. Twenty-five grams of iodine penta-oxid was placed in a small U-tube, which was suspended in an oil bath and connected with a Wolff blood-absorption tube containing  $\frac{1}{2}$  gram of iodide of potassium dissolved in 5 cubic centimeters of water. The tube containing the iodine penta-oxid was also connected with two U-tubes, one containing sulphuric acid, the other small pieces of potassium hydrate, so as to remove from the air to be analyzed (before it came in contact with the iodine penta-oxid) all unsaturated hydrocarbons, sulphid of hydrogen, sulphur dioxid, and similar reducing gases. In all the experiments the oil bath, in which the U-tube containing the iodine penta-oxid was suspended, was heated to 150° C., as preliminary tests showed that the reaction was not a quantitative one at lower temperatures.

#### DISCUSSION.

PROFESSOR ROBINSON, Brunswick: It is well known that those inspectors engaged in public health work have been unable thus far to detect the presence of this gas in the air of rooms, and if they are able to detect it by the method of Dr. Kinnicutt a great step has been taken in advance.

DR. WELCH: There is great danger from gas leakage from a stove and from gas. It is no doubt injurious to the health of occupants of rooms, and cannot be readily detected.

PROFESSOR RICHARDS, Boston: In 1883 and 1884 a great deal of work was done in our laboratory with this method, using a modification of it. I have used that at various times since in cases of contamination of air of recitation rooms.

## THERAPEUTIC HINTS.

#### For Dysmenorrhœa.—

℞ Nitroglycerin . . . . .	gr. $\frac{1}{12}$
Spiritus . . . . .	m. xx
Aq. dest. . . . .	q. s. ad. $\frac{3}{4}$ iiss.

M. Sig. Two teaspoonfuls every fifteen minutes until physiological effects of drug appear.—*M. G. Price.*

#### For Severe Epistaxis.—

℞ Gelatin . . . . .	part i
Normal salt sol. . . . .	part xvi.

M. Sig. External use. Absorbent cotton is saturated with this solution, and used as a nasal plug. An aseptic coagulum forms which checks further bleeding.—*Da Costa.*

#### For Acute Bronchitis.—

℞ Ammonii carb. . . . .	gr. xxx
Tinct. hyoscyami . . . . .	3 iv
Codeinæ . . . . .	gr. ii
Syr. prun. virg. . . . .	3 iv
Aq. camphoræ . . . . .	q. s. ad. $\frac{3}{4}$ iv.

M. Sig. One teaspoonful every two hours.—*Hersvirsch.*

**For Pediculosis Capitis.**—The simplest and most effective way of getting rid of both parasites and nits is to shave the head and scrub it with soap and water. When for reasons of age or sex it is desirable to preserve the hair, it can be powdered with powdered pyrethrum, staphisagria, or sulphur, which will kill the lice. Nits and adults are both reached by hot vinegar or camphorated alcohol, or the following solution, which is highly recommended:

℞ Bichlorid of mercury . . . . .	1 part
Vinegar . . . . .	300 parts.

Another prescription is that of DESCROIZELLE:

℞ Tinct. pyrethri . . . . .	3 i
Tinct. rosamarin } . . . . .	3 ss
Tinct. cinchonæ } aa. . . . .	3 ss
Spiritus . . . . .	3 i.

M. Sig. External use.

An alcoholic solution of naphtha is also said to be very effective. Kerosene and the tincture of delphinium are old stand-bys, but the former is objectionable on account of its odor and greasiness, and the latter on account of its exensiveness.

#### Ointment for Rheumatism.—

℞ Ac. salicyl. pulv. . . . .	3 i
Ol. terebinth. . . . .	3 i
Lanolini . . . . .	3 i.

M. Ft. unguentum. Sig. Rub into the skin for five minutes after cleansing it with soap and water.—*Husson.*

#### For Prostatitis.—

℞ Ichthyol . . . . .	3 i
Ol. theobrom. . . . .	3 vi.

M. Ft. suppos. No. xii. Sig. Use one suppository at night and one in the morning after defecation. Under this treatment the pain, sense of pressure, etc., are said to decrease rapidly, and the hypertrophy to become sensibly diminished.—*A. Freudenberg.*



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a recognized authority wherever medical science is known, in his Handbook of Pharmacy, Materia Medica, and Therapeutics, under head of ALBUMINURIA, page 600, 7th edition, in the citation of remedies, says: "BUFFALO LITHIA WATER" of Virginia, is highly recommended."

Under head of CHRONIC BRIGHT'S DISEASE, page 601, same edition, in the citation of remedies, he says: "Mineral Waters, especially the BUFFALO LITHIA WATER of Virginia, which has many advocates."

**Dr. Alfred L. Loomis,** *late Professor of Pathology and Practical Medicine in the Medical Department of the University of New York, wrote: "For the past four years I have used BUFFALO LITHIA WATER in the treatment of Chronic Bright's Disease of the Kidneys, occurring in Gouty and Rheumatic subjects with marked benefits."*

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OR BLADDER, URIC ACID, PHOSPHATIC, OR OXALIC.

**John V. Shoemaker, M.D., LL.D.,**

*Professor of Materia Medica and Therapeutics in the  
Medico-Chirurgical College of Philadelphia, etc., in the  
N. Y. Med. Journal, of July 22, 1899: "The BUFFALO*

*LITHIA WATER is doubly efficient in rheumatism and gout. It dissolves uric acid and phosphatic sediments as well as other products difficult of elimination, while at the same time it exerts a moderately stimulant effect upon the renal cells, and thereby facilitates the swift removal of insoluble materials from the body. Without such action insoluble substances will precipitate in the kidneys and bladder. The intense suffering produced by stone, together with consecutive pyelitis and cystitis, are avoided by prompt elimination. Unquestionably, although the speedy removal of uric acid and other products of faulty tissue change is of conspicuous benefit, yet to prevent their formation is a service still more important. This service is performed by the BUFFALO LITHIA WATER when it corrects those digestive failures which are responsible for the production of deleterious materials."*

**Dr. J. W. Mallet,**

*Professor of Chemistry, University of Virginia: Extract from report of analysis of  
Calculi discharged by patients under the action of BUFFALO LITHIA WATER, Spring No. 2.  
"It seems on the whole probable that the action of the water [BUFFALO LITHIA] is primarily  
and mainly exerted upon Uric Acid and the Urates, but when these constituents occur along with and as cementing  
matter to Phosphatic or Oxalic Calculous materials, the latter may be so detached and broken down as to disintegrate  
the Calculous as a whole in these cases, also thus admitting of Urethral discharge."*

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## CORNELL UNIVERSITY MEDICAL COLLEGE, NEW YORK CITY.

The Session of 1899-1900 will begin Tuesday, October 3, 1899, and will continue about eight months. The course of instruction covers four years. Students who present credentials covering the full equivalent course in another accredited Medical College will be admitted to the Second Year Class. Students who present credentials from other accredited Medical Colleges of two or more full courses of study will be admitted to the Third and Fourth Years after passing examinations on those subjects, the study of which has been completed in the previous year.

In conjunction with the regular curriculum there is an optional Summer Course in operation during the months of May, June, and July, in which any student or post-graduate may select clinical work, which is distributed among some fifty dispensaries and hospitals. At the same time, if desired, lessons taught by recitations may be taken in Anatomy, Surgery, Medicine, Obstetrics, and Materia Medica.

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## Applied Therapeutics.

**The Value of Egg-White as Food.** In "Notes and Comments" (*Monthly Encyclopedia of Practical Medicine*, August, 1899) reference is made to the high food value of egg albumen, especially as a constituent of food for bottle-fed infants and for invalids. This fact was only recently brought prominently to the attention of the profession in two leading papers, respectively by Dr. Cotton of Chicago, and Dr. Chapin of New York. The advantages of the product are that it is easily secured and is more easily digested and assimilated than even the proteids of cows' milk. In combination with cereals, as in Eskay's food, it makes a superior artificial food. When such a food is mixed with cows' milk according to the usual directions the cereals serve the double purpose of separating the milk curd and rendering it sufficiently flocculent for even weak digestive organs, and of restraining putrefactive changes in the alimentary canal. The egg albumen replaces the loss in the proportion of the natural milk proteids which results from diluting the milk to render the curd flocculent, with a proteid which is both more easy of digestion and more nutritious than milk proteids.

**Viburnum in Uterine Affections.** The *Massachusetts Medical Journal* observes, editorially, that family physicians constantly meet cases of functional uterine disorders in patients who refuse to submit to a physical examination. In all such instances a remedy which is known to be valuable in a large majority of uterine disorders is a veritable boon to both patient and physician. Dysmenorrhea is the affection most frequently met, and often severely tests the physician's resources. The clinical reports of thousands of physicians at home and abroad are evidence that in viburnum, especially the compound now so long known as Dr. Hayden's, we have a powerful and reliable, yet harmless, remedy for all such diseases.

**Treatment of Threatened Abortion.** M'Kee (*Atlanta Medical and Surgical Journal*) observes how difficult it is at times to know what course is best to pursue in a case of threatened abortion. Often not only knowledge and experience but, alas, conscience are necessary. Strict antiseptic precautions should always be observed throughout. If uterine contractions can be controlled at all excellent results follow treatment with dioviburnia. The usual dose is a dessertspoonful four times a day. He cites an instance in which the mother made desperate attempts during two successive months to bring on a miscarriage. She was treated as stated and gave birth at full term to a fine boy. The following is good early treatment in the majority of cases.

Tinct. Opil Deod.	f 3 i
Dioviburnia	f 3 ii

M.

Sig. One teaspoonful every two hours with absolute rest in bed.

**Gude's Peptomangan.** Pohl (*Aertztlicher Central Anzeiger*, September 20, 1899) observes that to be really efficient in therapeutics an iron preparation must have a distant, or general, effect as well as a local effect. In many instances the iron administered simply goes to remove the excess of hydrogen sulphide in the alimentary tract by forming the insoluble sulphide of iron. This removal permits the iron contained in the food to be absorbed, and thus the effect of the treatment is slight and indirect. Next to iron the product best suited to remove hydrogen sulphide is manganese, hence the value of this remedy in connection with iron. The closer an iron preparation approaches the form in which iron is found in food products the larger will be the quantity absorbed. For these reasons Gude selected the peptonate and combined manganese with the iron, as in his peptomangan. The advantage gained in the product is that of absorption in large quantities and the production of the general effect. The preparation produces no local disturbances and good results quite generally follow its employment. Anemia, chlorosis, neurasthenia, hysteria, malarial cachexia, etc., are alike successfully treated in this way. In the obese type of chlorosis a marked reduction in the body weight is observed as well as improvement in the condition of the blood. In the lean type absolute rest in bed should be enjoined in connection with the treatment to ensure prompt increase in weight. Several weeks are required to complete the cure. The preparation is so easily absorbed and has such a pronounced general effect that it is valuable in hysteria and neurasthenia when all other chalybeates would fail.

**Bitter Natural Waters.** Bogoslawsky (*Transactions of the Moscow Section of the Society for the Preservation of Public Health*, No. 6) calls attention to the importance and high value of certain bitter, natural waters in the treatment of many diseases. His conclusions are drawn from personal clinical observations and are favorable to apenta because of its gentle action. It contains less calcium sulphate than other bitter aperient waters and no magnesium chloride, which probably fully accounts for the important fact that apenta does not cause crampy pains. It is especially indicated in the treatment of constipation due to atony of the bowels. The effect is prompt and pleasant, and treatment is not immediately followed by increased constipation, as is the case when many other so-called remedies are employed. Apenta has proven of great value also in the treatment of obesity, especially in subjects of the bilious temperament.

**The Value of Modifying Milk.** Uffelmann (*Text-Book, Domestic Hygiene of the Child*) recommends Mellin's food for modifying cows' milk. It has real value. Whether dissolved in water and the solution used to dilute the milk, or dissolved directly in the milk, the digestibility of the milk is improved and its food value increased. It renders the casein flocculent and adds richness.

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